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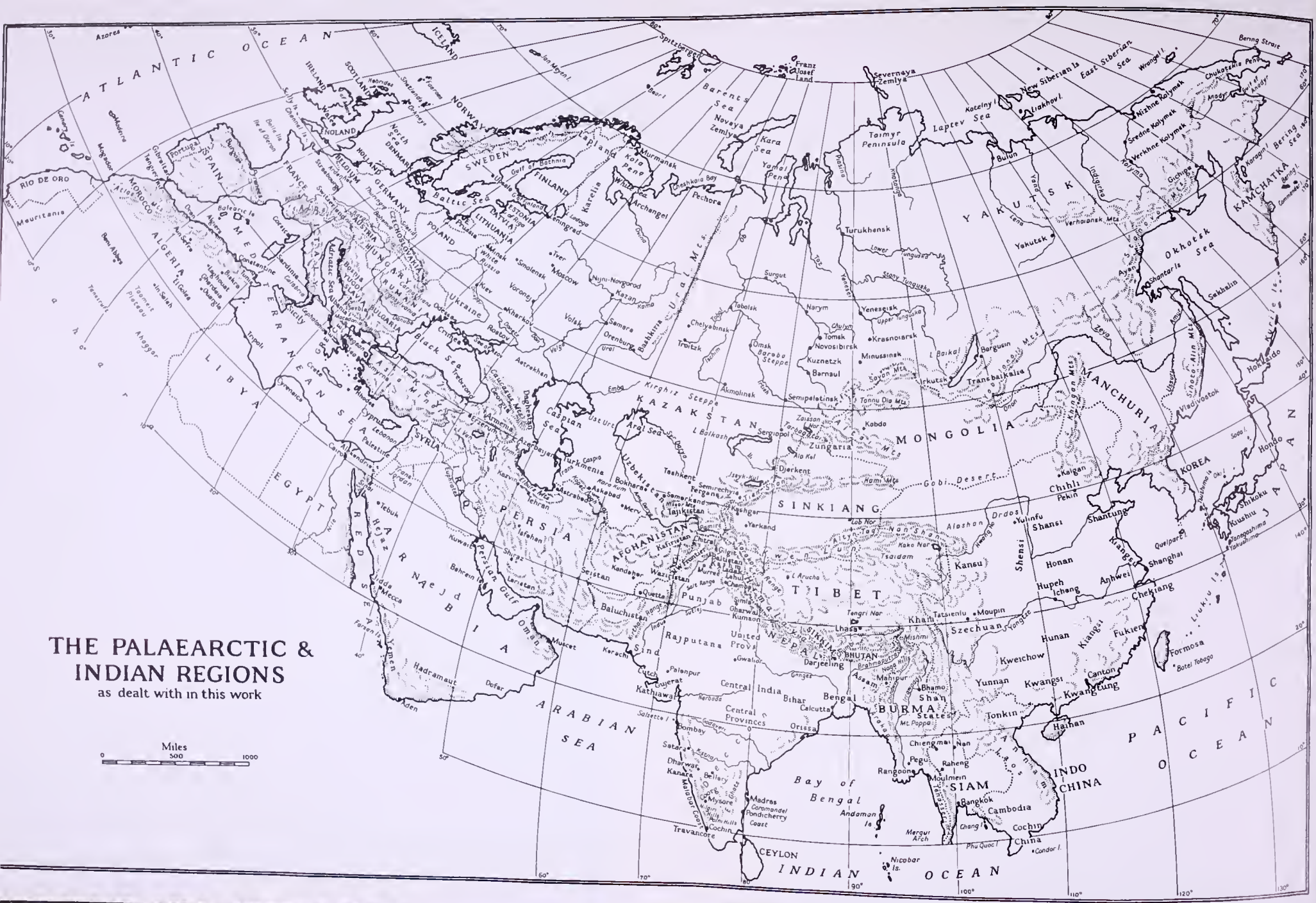
THE PALAEARCTIC & INDIAN REGIONS
as dealt with in this work
Miles
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ATLANTIC OCEAN
ARABIAN SEA
Bay of Bengal
INDIAN OCEAN
PACIFIC OCEAN
Baltic Sea
Black Sea
Caspian Sea
Aral Sea
Barents Sea
Kara Sea
Laptev Sea
East Siberian Sea
Okhotsk Sea
Bering Sea
Persian Gulf
Red Sea
Arabian Sea
Mediterranean Sea
ICELAND
NORWAY
SWEDEN
FINLAND
IRELAND
SCOTLAND
ENGLAND
HOLLAND
BELGIUM
GERMANY
DENMARK
POLAND
FRANCE
SPAIN
PORTUGAL
AUSTRIA
HUNGARY
CZECHOSLOVAKIA
RUMANIA
BULGARIA
YUGOSLAVIA
GREECE
ITALY
SICILY
CRETE
CYPRUS
TURKEY
SYRIA
LEBANON
PALESTINE
EGYPT
LIBYA
ALGERIA
MOROCCO
TUNISIA
RIO DE ORO
MAURITANIA
BALEARIC Is.
AZORES
CANARY Is.
MADEIRA
CAPE VERDE Is.
SPITSBERGEN
FRANZ JOSEF LAND
SEVERNAYA ZEMLYA
NOVAYA ZEMLYA
NEW SIBERIAN Is.
WRANGEL I.
BERING STRAIT
CHUKOTSKIE PEN.
KAMCHATKA
SAKHALIN
HOKKAIDO
HONDO
SHIKOKU
KYUSHU
JAPAN
RYUKYU Is.
FORMOSA
BOTEL TOBAGO
HAINAN
CEYLON
NICOBAR Is.
ANDAMAN Is.
MALDIVE Is.
LACCADIVE Is.
KURIA MURIA Is.
KAZAKSTAN
MONGOLIA
SINKIANG
TIBET
MANCHURIA
KOREA
AFGHANISTAN
PERSIA
ARABIA
NEPAL
BHUTAN
SIKKIM
BURMA
SIAM
INDO CHINA
LAOS
CAMBODIA
CHINA
YAKUTSK
Ural Mts.
Himalaya Mts.
Gobi Desert
Kirghiz Steppe
Baraba Steppe
Taimyr Peninsula
Verkhoyansk Mts.
Stanovoy Mts.
Khingan Mts.
Sayan Mts.
Altai Mts.
Tannu Ola Mts.
Hindu Kush
Karakoram
Pamirs
Elburz Mts.
Zagros Mts.
Tibesti Plateau
Ahaggar
Tassili
Atlas Mts.
Sierra Nevada
Pyrenees
Alps
Carpathians
Caucasus Mts.
Dinaric Alps
Apennines
Taurus Mts.
Anti-Lebanon
Hejaz
Nejd
Rajputana
Punjab
Baluchistan
Sind
Gujerat
Kathiawar
Central India
Central Provinces
Bihar
Bengal
Assam
Orissa
Deccan
Malabar Coast
Coromandel Coast
Nilgiri Hills
Travancore
Mysore
Hadramaut
Oman
Yemen
Aden
Mecca
Medina
Muscat
Persian Gulf
Kuwait
Bahrein Is.
Qatar
Trucial Oman
Euphrates
Tigris
Jordan
Nile
Suez Canal
Panama Canal
Gibraltar
Strait of Dover
Bosporus
Dardanelles
Strait of Hormuz
Bab el Mandeb
Malacca Strait
Torres Strait
Cook Strait
Tasmania
New Zealand
Hawaiian Is.
Fiji Is.
Samoa Is.
Tonga Is.
Marquesas Is.
Society Is.
Tuamotu Archipelago
Easter I.
Galapagos Is.
Juan Fernandez Is.
Falkland Is.
Tierra del Fuego
Cape Horn
Cape of Good Hope
Cape Agulhas
Cape Town
Cape Verde
Cape Guardafui
Cape Comorin
Cape Farewell
Cape Horn
Cape Wrath
Cape Finisterre
Cape Matapan
Cape Spartivento
Cape Bon
Cape Blanco
Cape Palliser
Cape Reinga
Cape Leeuwin
Cape Otway
Cape Howe
Cape Byron
Cape Moreton
Cape York
Cape Flattery
Cape Mendocino
Cape Blanco
Cape Disappointment
Cape Flattery
Cape Scott
Cape Chidley
Cape Farewell
Cape Dyer
Cape Walsingham
Cape Prince of Wales
Cape Lisburne
Cape Barrow
Cape Bathurst
Cape Parry
Cape Krusenstern
Cape Dezhnev
Cape Olyutorski
Cape Lopatka
Cape Soya
Cape Shiriya
Cape Nosoro
Cape Erimo
Cape Inubo
Cape Nomo
Cape Sata
Cape Ashizuri
Cape Muroto
Cape Shionomisaki
Cape Idzu
Cape Nojima
Cape Inubo
Cape Kinkasan
Cape Shirakami
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Cape Tsushima
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Cape Shiono
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Cape Sata
Cape Nomo
Cape Inubo
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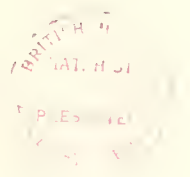
Cape Shionomisaki
Cape Muroto

CHECKLIST OF
PALAEARCTIC AND INDIAN MAMMALS
1758 to 1946



BRITISH MUSEUM
(NATURAL HISTORY)

CHECKLIST
OF
PALAEARCTIC
AND
INDIAN MAMMALS
1758 to 1946

by
J. R. ELLERMAN
and
T. C. S. MORRISON-SCOTT

SECOND EDITION

LONDON
TRUSTEES OF THE BRITISH MUSEUM (NATURAL HISTORY)

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PREFACE

It is a commonplace that novelty exercises such an attraction that it frequently diverts to itself a measure of attention out of all proportion to the true value of the subject or object. In science the field of every new discovery forthwith becomes the focal point round which attention centres, to the detriment of other fields more important but less glamorous. The tide of geographical exploration in the nineteenth century with its accompanying flood of zoological novelties exercised precisely this effect with the result that, whereas the vertebrate faunas of the Ethiopian, Oriental, Nearctic, and even the Australian and Neotropical regions, have been more or less comprehensively listed in recent years, there have been few comparable works relating to the Palaearctic region where taxonomic zoology was born and cradled. The present work, whose geographical limits have been selected to link up with Chasen's (1940) list of Malayan mammals and Allen's (1939) similar list for the Ethiopian region, is an attempt to remedy this lack of balance in the field of systematic mammalogy.

The authors have succeeded in producing a list which is not merely one of the working tools that every systematist must make for his own use. It is, in fact, a critical revision, shorn of all detailed argument, based on the unrivalled collections of the Museum.

British Museum (Natural History)
London

H. W. Parker
Keeper of Zoology

PREFACE TO SECOND EDITION

In the course of reprinting the opportunity has been taken to incorporate the amendments contained in the sheet originally issued with the work, and those published later in *J. Mammal.*, 1953, **34**: 516–518, as well as some which have since come to light. These amendments have, where possible, been made to the text itself; but those which were too long to be dealt with in this way have been printed as additional page 742d.

A list of names which were overlooked in the original edition appears as additional pages 742a–c. Mr J. E. Hill has been responsible for this, as well as for incorporating the amendments referred to above.

No taxonomic alterations have been made, and it has not been possible in a photolithographic edition to deal with forms described since 1946.

June 1965
British Museum (Natural History)
London

T. C. S. Morrison-Scott
Director

Dedicated to the memory of

JAMES LAWRENCE CHAWORTH-MUSTERS

INTRODUCTION

Our late friend and colleague, James Lawrence Chaworth-Musters, had spent much time latterly on the synonymies of the species of Palaearctic mammals, and in particular had devoted much patient research to the type localities and dates of publication of species described in the eighteenth and early nineteenth centuries. At the time of his death, in April 1948, he had nearly completed this work for the Insectivora and done much of the Chiroptera and Rodentia. His executors kindly placed his manuscript cards and foolscap sheets at our disposal, and we have made free use of the data referred to above. His death was a most untimely and unfortunate loss to the Museum and to his friends and colleagues. (An obituary notice appears in *Journal of Mammalogy*, 1949, *30:* 95.)

Extent and Method of this Work

The area covered by this work is the Palaearctic region and the Indian[1] and Indo-Chinese subdivisions of the Oriental region. Zoologists will be well aware of the difficulty in delimiting these zoogeographical areas. However, for the purposes of a list such as this, some arbitrary limit must be set. In Africa we have drawn the boundary along the parallel of 20° N. which, owing to the barrier of the Sahara, does correspond reasonably well with the facts. The boundary in Malaya has, however, been drawn in a purely arbitrary manner along the parallel of 10° N. This line has been chosen because it is the northern limit of the area covered by Chasen, 1940, *Handlist of Malaysian Mammals.*

The limits in point of time are from 1758 to 1946. That is to say, we have endeavoured to include all forms of recent mammals named from the tenth edition of Linnaeus up till the end of 1946, except that domestic animals, and wild mammals which have become extinct, have as a rule been omitted.

No one man can, of course, be a connoisseur of more than a small part of the class Mammalia. Nevertheless, in writing this work we have thought it worth while attempting a revision rather than making a mere nominal compilation. We have therefore re-examined all relevant monographs and revisions, in so far as they are known to us, together with the extensive study collections of the British Museum, and this checklist represents the results. Whether readers agree with our views or not, we hope that the presentation of such a survey within the covers of one book will prove useful.

There has been a considerable reduction in the number of named forms regarded as valid, though we have only proceeded with this "lumping" to the extent that the evidence before us justified it; there is probably much more to be done, and subspecies have been arranged in order of priority for the convenience of subsequent revisers.

[1] The term 'India' has been used throughout in its zoogeographical sense to include the modern India and Pakistan.

We have recognized 809 species of mammals in the Palaearctic and Indian regions as defined above.

We have endeavoured to indicate the diagnostic characters of each genus and species by reference to the appropriate works, and where they are non-existent we have provided keys. The distribution of each species has been approximately shown, though it should be remembered that the distributions of many mammals are imperfectly known and that the ranges of many of the larger mammals are shrinking every year.

Nomenclatorial Difficulties

There are workers who seem to take a delight in bedevilling zoology with esoteric changes of nomenclature, to the considerable irritation of their colleagues and the confusion of non-specialists. In fact, exasperation at their efforts leads many to wonder whether they have any scientific work to attend to.

Perhaps this unhappy circumstance is due to the idea that the only way to attain stability in nomenclature is rigorously to apply the law of priority, and that the resulting confusion will in the end have been worth while. It is of course true that with the passage of time the likelihood of fresh discoveries of early names becomes less. But the point is that the risk can never be eliminated.

On the other hand, the *Official List of Generic Names in Zoology* and the *Official List of Specific Trivial Names in Zoology* do offer a chance of real stability (without confusion), and it is the view of the International Commission on Zoological Nomenclature that this is the way to attain it (*Bull. Zool. Nomencl.*, 1950, *4:* 267, 627 and *5:* 147). It should therefore be the purpose of zoologists to see that the names of as many genera and species as possible of the groups in which they specialize are placed on these lists by the International Commission, and thereby protected from the activities of nomenclatorial excavators.

The corollary to the above lists are the *Official Index of Rejected and Invalid Generic Names in Zoology* and the *Official Index of Rejected and Invalid Specific Trivial Names in Zoology* which the Commission instituted for the reception of names which they have either suppressed under their plenary powers, or declared to be otherwise unavailable (*Bull. Zool. Nomencl.*, 1950, *4:* 333).

The Commission have urged that zoologists who discover a name which would cause confusion or inconvenience, through antedating a later but currently adopted name, should refrain from publishing their unfortunate find, and instead should hurry it off to the Commission for burial in the appropriate *Index*, at the same time requesting the Commission to place on the appropriate *List* the later but currently used name (*Bull. Zool. Nomencl.*, 1950, *4:* 234, *5:* 18).

These are the principles which we have endeavoured to follow in this checklist. So far as Palaearctic and Indian genera are concerned, the following works have proved the most troublesome:

a Frisch, 1775, *Das Natursystem der vierfussigen Thiere.*[1] This work has generally been regarded as unavailable under the *Règles* and Sherborn rejected it when compiling his *Index Animalium.* Simpson (1945), however, in his *Classification of Mammals*

[1] Formally rejected by Opinion 258, 1954. Nevertheless by Opinion 581, 1960, the Commission validated *Dama* Frisch, 1775, for the European Fallow Deer.

dates some fifteen well-known names from Frisch (1775). It is not clear why he did this since, in any case, some of the names have been dated from other authors by Opinion 91 of the International Commission. The matter has now been settled by the Commission who, in Paris in July, 1948, declared this work of Frisch to be unavailable (*Bull. Zool. Nomencl.*, 1950, *4:* 549). The Commission made one reservation They had previously (*Bull. Zool. Nomencl.*, 1950, *4:* 547) declared that Zimmermann, 1777, *Specimen Zoologiae Geographicae* was unavailable and that Zimmermann, 1778–1783, *Geographische Geschichte* was available. The result of all this is that the name *Dama* becomes the technically valid name for the Virginian Deer of America instead of for the Fallow Deer of Europe, in which latter sense it has been used for years. The Commission, realizing the confusion which this would cause, indicated (*Bull. Zool. Nomencl.*, 1950, *4:* 551) that they would use their plenary powers to prevent such a transfer if zoologists so desired, and in the meantime recommended them to make no change. Apart from this one name, the non-availability of Frisch (1775) appears to cause no inconvenience.

(*b*) Oken, 1815–1816, *Lehrbuch der Naturgeschichte*. This work can scarcely be held consistently to exhibit the principles of binominal nomenclature and the Commission are considering the question of its availability.[1] If Oken is declared unavailable, then there are certain generic names which it appears important to us to save. One of us (T. C. S. M.-S.) has therefore made application to the Commission for the following names[2] of Oken to be placed on the *Official List:*

Citellus	*Tayra*
Genetta	*Vulpes*
Grison	*Pan*
Panthera	

(*c*) Brisson, 1762, *Regnum Animale*. The genera proposed as new in this work have been generally accepted by mammalogists and are now well established. But the technical validity of the book under the *Règles* is doubtful and the matter is now[3]before the Commission (*Bull. Zool. Nomencl.*, 1950, *4:* 314). In the meantime Hopwood, 1947, *P.Z.S. 117:* 533, has rejected Brisson (1762) and would date his names from other and later authors. However, his suggestions, if adopted, would in several cases prove unfortunate, and we have asked the Commission to validate the following of the generic names[4] of Brisson:

Cuniculus. This is the Paca. The next use of *Cuniculus* is of Gronovius (1763) which, though also the Paca, seems insecure under the *Règles*. The next use is *Cuniculus*, Meyer (1790), which is the European Rabbit. It seems desirable, therefore, to retain *Cuniculus* Brisson.

Glis. Unless *Glis* Brisson is validated, the name of the Fat Dormouse must be *Myoxus* Zimmermann (1780). (See Ellerman, 1949, *Ann. Mag. N.H. 2:* 894, who took the precaution of designating *Glis zemni* as the type species of *Glis* Erxleben, 1777, in order to forestall the transference of *Glis* to the marmots, a worse confusion which would otherwise ensue from any suppression of *Glis* Brisson.)

Meles. It would be wise to validate this name as of Brisson in view of the doubt which surrounds the use as of Geoffroy (1767) and Storr (1780).

[1] Rejected by Opinion 417, 1956. [2] A re-submission was requested for all applications prior to October 1959 which were still outstanding (*Bull. Zool. Nomencl.*, 1963, 20: 81. This has now been done, but in respect of *Pan* and *Panthera* only (T.C.S.M.-S., 1965). [3] No decision has yet (1965) been made. [4] Except for *Odobenus* these require a further application (*fide* Secretary to the Commission, 1965).

Odobenus. After considerable shuffling of the names of the Walrus, zoologists have finally settled down with *Odobenus*.[1] If this is invalid then *Rosmarus* Brunnich, 1771, will have to be used.

Tragulus. The consequence of sinking this name of Brisson would indeed be unfortunate. Hopwood suggests that *Tragulus* may equally well be dated from Boddaert (1785). But *Tragulus* Boddaert has nothing to do with the Tragulidae. It is *Moschus moschiferus*, a member of the Cervidae. A change in the family name of the chevrotains would then become necessary, to add to the confusion.

Tardigradus. The earliest name for the Loris seems to be *Tardigradus* Boddaert, 1785, which has hitherto been regarded as preoccupied by *Tardigradus* Brisson, 1762, a Sloth. Hence *Loris* E. Geoffroy, 1796, is in current use for the Loris. If *Tardigradus* Brisson is invalid then *Tardigradus* Boddaert must be used for the Loris, which brings with it a secondary confusion in that the name "Tardigrada" is a synonym of "Bradypodoidea".

Giraffa, *Hyaena*, *Hydrochoerus*, *Lutra*, *Tapirus*. These names are all available, with the same meaning, from Brunnich, 1771, *Zoologiae Fundamenta*, though the name of the Capybara is here spelt *Hydrochaeris*. It may therefore be questioned whether there is any need to validate the use of these names from Brisson (1762). However, the Commission may well take the view that these names would be better protected by being validated from the earlier date, apart from the consideration of sanctioning a long-established usage.

Pteropus. This name comes in the same category as the last five, since it can be dated from Erxleben (1777) without change of meaning. There has, however, been some slight doubt about the type species and it is considered safer to validate the name as of Brisson (1762).

d) Rafinesque, 1815, *Analyse de la Nature*. This book contains many *nomina nuda*, some of which are currently used. So far as the area covered by the present work is concerned, we consider that one of these names, *Muntiacus*,[2] should be placed on the *Official List*. The Muntjak was known many years ago as *Cervulus* Blainville, 1816, but *Muntiacus* is now in current use and, although it cannot really be pleaded that confusion would result, it would not be a helpful step to revert now to *Cervulus*. We have submitted this case to the Commission.

Andersen, 1908, *Ann. Mag. N.H.* 1: 431, discusses the technical availability of Rafinesque's (1815) genera.)

Abbreviations and Symbols

The abbreviations of the titles of certain periodicals have been reduced beyond those shown in the *World List:*

P.Z.S. = Proc. Zool. Soc., London
N.H. in combination) = Nat. Hist.

A question mark before an entry in a synonymy does not mean that the date is doubtful but that the name concerned is not certainly a synonym.

A question mark in parentheses before the specific trivial name of a nominal race

[1] Validated by Opinion 367, 1957. [2] Validated by Opinion 400, 1957.

indicates that the latter is probably a race of the species concerned but that there is some doubt.

N.V. = *Non vidimus* (with reference to the original publication).

Acknowledgments

We gladly record our gratitude to many of our colleagues in this Museum for their generous help with, and friendly interest in, this work.

We should especially like to thank the following: Dr. F. C. Fraser, for his advice and assistance in dealing with the Cetacea; Mr. A. C. Townsend, for helping us with difficult textual and bibliographical problems; and Mr. R. W. Hayman, for much help with the Chiroptera.

So far as possible every reference in this book has been checked with the original, and we desire to record the assistance which has been given us by the following of our colleagues—in fact without their help this work would almost certainly have proved too much for us: Mr. R. W. Hayman and Mr. G. W. C. Holt of the Mammal Room, who between them checked most of the references; Mr. G. W. F. Claxton, Mr. F. C. Sawyer, Mr. W. H. Mabbott and Mr. J. E. Yateman of the General and Zoological Libraries, to whom an incomplete or distorted reference was a professional challenge which they rarely failed to meet; and Miss J. M. Ingles who has been of great personal assistance to us.

Authorship and New Names

We take joint responsibility for this book except for the classification of the Rodents and Lagomorphs, which is the work of J. R. E., and the Ungulates for which T. C. S. M.-S. is responsible.

The new names contained in this work, a list of which appears on page 742, are proposed by us jointly irrespectively of the order to which they belong.

J. R. Ellerman

T. C. S. Morrison-Scott

British Museum (Natural History)

31*st December*, 1950

CLASS MAMMALIA

There are very few works dealing extensively with the class Mammalia. The following are the most important:

GREGORY, W. K. 1910. The orders of mammals. *Bull. Amer. Mus. N.H. 27.*
FLOWER, W. H., & LYDEKKER, R. 1891. *An introduction to the study of mammals, living and extinct.* London (A. & C. Black).
PARKER, T. J., & HASWELL, W. A. 1940. *A textbook of zoology, 2, Chordata.* (Revised by C. Forster Cooper.) London (Macmillan).
SIMPSON, G. G. 1945. The principles of classification and a classification of mammals. *Bull. Amer. Mus. N.H. 85.*
WEBER, M. 1927–1928. *Die Säugetiere* (2 vols). Jena (G. Fischer).
WINGE, H. 1923–1924. *Pattedyr-Slaegter* (3 vols). Copenhagen (H. Hagerup). (English translation by G. M. Allen and E. Deichmann, 1941–1942. Copenhagen (C. A. Reitzel)).

Simpson (1945) is the basic work on the classification of mammals. The mammals with which this checklist is concerned all belong to the infraclass Eutheria, which Simpson divides into four cohorts:

UNGUICULATA
Orders: Insectivora, Dermoptera, Chiroptera, Primates, Pholidota.

GLIRES
Orders: Lagomorpha, Rodentia.

MUTICA
Order: Cetacea.

FERUNGULATA
Superorder: FERAE
Order: Carnivora (Suborders: Fissipedia, Pinnipedia).
Superorder: PAENUNGULATA
Orders: Proboscidea, Hyracoidea, Sirenia.
Superorder: MESAXONIA
Order: Perissodactyla.
Superorder: PARAXONIA
Order: Artiodactyla.

We agree with Simpson in distinguishing the Mutica and the Glires, and follow the broad outline of his classification except that we retain the Pinnipedia as an order, and on account of the fact that his Ferungulata seem closely allied to his Unguiculata we have listed them directly after this cohort.

ORDERS: 1. Insectivora, page 8
2. Dermoptera, page 89
3. Chiroptera, page 90
4. Primates, page 189
5. Pholidota, page 213
6. Carnivora, page 215
7. Pinnipedia, page 321
8. Hyracoidea, page 334
9. Proboscidea, page 336
10. Sirenia, page 337
11. Perissodactyla, page 338
12. Artiodactyla, page 343
13. Lagomorpha, page 419
14. Rodentia, page 456
15. Cetacea, page 712

ORDER INSECTIVORA

Special works of reference: Besides works such as G. S. Miller, 1912, *Catalogue of the Mammals of Western Europe*; G. M. Allen, 1938 & 1940, *Mammals of China and Mongolia*; and works by Bobrinskii and Ognev on Mammals of the U.S.S.R., see particularly A. Cabrera, 1925, *Genera Mammalium; Insectivora, Galeopithecia*. This work gives keys to all families and genera of Insectivora here recognized and dealt with. See also G. E. Dobson, 1882–1890, *Monograph of the Insectivora*.

FAMILIES: Erinaceidae, page 16
Macroscelididae, page 14
Soricidae, page 41
Talpidae, page 29
Tupaiidae, page 9

Simpson, 1945, *Bull. Amer. Mus. N.H. 85:* 61, 176, 182, referred the Tupaiidae (as type of a special superfamily), to the suborder Prosimii of the order Primates. Most authors refer these animals to the Insectivora. If they are so close to Lemuroids that it is thought best to refer them to Primates, surely another course would be to refer the Prosimii to the Insectivora, and restrict Primates to the Anthropoidea (perhaps with the Tarsiidae). Some authors, such as Gregory and Weber, separate the Tupaiidae and Macroscelididae from the Insectivora as a separate order Menotyphla. This is strongly supported by Broom (*in litt*). However, for the present we prefer to list these families as Insectivora. Apart from Tupaiidae Simpson recognized three superfamilies: the Erinaceoidea for the Erinaceidae and some extinct allies; the Macroscelidoidea for the Macroscelididae (which only occur in North-West Africa in the present region); and the Soricoidea for the Soricidae and Talpidae (which appear to us to be very distinct from each other morphologically, particularly as regards the very large first lower incisor in the Soricidae).

FAMILY TUPAIIDAE

Genera: *Anathana*, page 13
Dendrogale, page 13
Tupaia, page 10

This family was monographed in great detail by Lyon, 1913, *Proc. U.S. Nat. Mus. 45:* 1–188. Most subsequent classifications have been based on this useful paper. Only the typical subfamily, the Tupaiinae, occurs within the region now under discussion, and its distribution is Indo-Malayan. Lyon gives keys to generic characters of the three genera listed above and their extralimital allies. The main distinctions of the four species here listed as valid and which are certainly known to occur north of the area treated by Chasen, 1940, *Handlist Malaysian Mammals*, are as follows:

1. Relatively small animals, with the tail rounded and close-haired for its whole length. *Dendrogale murina*
   Relatively larger animals, with the tail clothed with longer hairs, and squirrel-like in formation ——2

2. Lower canine little differentiated, not higher than adjacent lower I 3 and P 2. Fenestrae in zygoma small and inconspicuous; hypocones in upper molars unusually prominent. *Anathana ellioti*
   Lower canine clearly differentiated, clearly higher than adjacent lower I 3 and P 2. Fenestrae in zygoma normally large and conspicuous; hypocones in upper molars most often less prominent. ——3

3. Tail considerably longer than head and body. Much black on lower part of back. Lower canine much larger than the incisor in front of it; central upper incisors conspicuously larger than lateral pair. *Tupaia nicobarica*
   Tail most often shorter than, or not much longer than, head and body. Colour of back different. Lower canine and central upper incisors not conspicuously enlarged. *Tupaia glis*

(We have not included *Tupaia minor* in the key as we are not sure whether it is extralimital or not. According to Lyon's key, *T. minor* should be dentally as *nicobarica* but smaller than that species and coloured differently.)

North of the Malay Peninsula Lyon recognized two species, *T. glis* and *T. belangeri*, in addition to the very distinct *T. nicobarica*. They were said to differ in colour and mammary formula. But since Lyon's revision was published there have been many new forms described of the *T. glis* group, and examination of the types in the British Museum alone shows that there is no certain colour distinction between *belangeri* and races referrable to *glis*. Chasen (1940) refers several of Lyon's species to *T. glis* as races, and it seems that there is little essential difference between the southern *glis* races and the northern *belangeri* and allies, which are here considered as representing *T. glis*. It may be noted that, with reference to the above key, the hypocones may be present in the upper molars of some individuals of *T. glis siccata* which in this character approaches *Anathana*; and that in some forms of *T. glis*, for instance *T. g. lepcha*, there is a tendency for the tail to be longer than the head and body. The retention of the

genus *Anathana* is here principally based on the reduced lower canine. Thomas (1917) thought two forms of the *T. glis* group occurred in Tenasserim. These two, *clarissa* and *tenaster*, differ in the length of the rostrum, which is more lengthened in *clarissa*. However, these two forms look so alike externally that very tentatively *tenaster* is here regarded as a synonym. To prove the contrary it would be necessary to collect a much larger series in Tenasserim than these two names are based on.

Subfamily Tupaiinae

Genus **TUPAIA** Raffles, 1821

1821. *Tupaia* Raffles. Trans. Linn. Soc., London, *13:* 256 (May, 1821.) *Tupaia ferruginea* Raffles.
1821. *Sorex-glis* Cuvier & Geoffroy, Hist. Nat. Mamm. livraison, 35: 1 (December, 1821, or perhaps early in 1822.) *Sorex glis* Diard & Duvaucel.
1822. *Glisorex* Desmarest, Mammalogie, footnote, 536. Substitute for *Sorex-glis*.
1824. *Cladobates* Cuvier, Dents Mamm. 251, pl. 17. *Tupaia ferruginea* Raffles.
1827. *Hylogale* Temminck, Mon. Mamm. xix. Substitute for *Tupaia*.
1843. *Hylogalea* Müller & Schlegel, Verh. Nat. Gesch. Ned. Overz. Bezitt. 159. (Emendation.)
1855. *Glisosorex* Giebel, Odontographie, 18. (Emendation of *Glisorex*.)
1860. *Tapaia* Gray, Ann. Mag. N.H. *5:* 71. (? Misprint for *Tupaia*.)
1882. *Glirisorex* Scudder, Nomencl. Zool. *2:* 131. (Emendation of *Glisorex*.)
1888. *Glipora* Jentink, Cat. Syst. Mus. H.N. Pays Bas. *12*, Mamm.: 118. *Glipora leucogaster* Jentink (*nom. nud.*) = *Tupaia minor* Günther.
1913. *Tana* Lyon, Proc. U.S. Nat. Mus. *45:* 134. *Tupaia tana* Raffles, from Sumatra. Valid as a subgenus.

3 species in the area covered by this list:
Tupaia glis, page 10
Tupaia minor, page 12
Tupaia nicobarica, page 12

Tupaia glis Diard, 1820 — Common Tree-Shrew

Approximate distribution of species: Yunnan, Kwangsi, Hainan in South-West China; Sikkim, Manipur, Assam, Burma, Tenasserim; Indo-China, Siam, Malay States, Sumatra, Java, Borneo, and many small adjacent islands, to Palawan.

(Tupaia glis glis Diard, 1820. Extralimital)
1820. *Sorex glis* Diard, Asiat. J. Month. Reg. *10:* 478. (*N.V., fide* Lyon & Chasen.) Penang Island, Malay Peninsula.
1822. *Sorex glis* Diard & Duvaucel, Asiatick Res. *14:* 471, pl. 9. Penang Island.

Tupaia glis belangeri Wagner, 1841
1841. *Cladobates belangeri* Wagner, Schreber's Säugeth. Suppl. *2:* 42. Siriam, near Rangoon, Pegu, Burma.
1842. *Tupaia peguanus* Lesson, Nouv. Tabl. Règn. Anim. Mamm. 93. ? Pegu.
Range: Southern Burma and certain islands of Mergui Archipelago.

TUPAIA GLIS DISSIMILIS Ellis, 1860

1860. *Sciurus dissimilis* Ellis in Gray, Ann. Mag. N.H. *5:* 71. Pulau Condore, off south coast of Indo-China.

TUPAIA GLIS CHINENSIS Anderson, 1879

1879. *Tupaia chinensis* Anderson, Zool. Res. West Yunnan, 129, pl. 7, figs. 8 and 9. Ponsee, Kakhyen Hills, 3,185 ft., and Mnangla, Sanda Valley, 2,400 ft., Western Yunnan, China.

TUPAIA GLIS MODESTA J. Allen, 1906

1906. *Tupaia modesta* Allen, Bull. Amer. Mus. N.H. *22:* 481. Lei-mui-mon, Island of Hainan, South China.

1914. *Tupaia belangeri yunalis* Thomas, Ann. Mag. N.H. *13:* 244. Mongtsze (or Mengtsz), Southern Yunnan, China. (Status *fide* Osgood, 1932.)

1925. *Tupaia belangeri tonquinia* Thomas, P.Z.S. 497. Bao-ha, Tonkin, Indo-China. (Status *fide* Osgood, 1932.)

(?) 1936. *Tupaia belangeri pingi* Ho, Contr. Biol. Lab. Sci. Soc. China, *12*, 4: 78. Bao-peng, Island of Hainan.

Range: Hainan, Annam, Laos, Tonkin, and Southern Yunnan.

TUPAIA GLIS CONCOLOR Bonhote, 1907

1907. *Tupaia concolor* Bonhote, Abstr. P.Z.S. 2; P.Z.S. 7. Nhatrang, Annam, Indo-China. Ranges to Cambodia and Cochin-China.

TUPAIA GLIS SICCATA Thomas, 1914

1914. *Tupaia belangeri siccata* Thomas, Ann. Mag. N.H. *13:* 243. Zibugaung, Lower Chindwin, Burma. Range includes Chin Hills, Mt. Popa, Shan States, Burma.

TUPAIA GLIS LAOTUM Thomas, 1914

1914. *Tupaia belangeri laotum* Thomas, Ann. Mag. N.H. *13:* 244. Nan, 290 m., Siam.

TUPAIA GLIS SINUS Kloss, 1916

1916. *Tupaia concolor sinus* Kloss, P.Z.S. 36. Koh Chang (Island), South-East Siam.

TUPAIA GLIS CLARISSA Thomas, 1917

1917. *Tupaia clarissa* Thomas, J. Bombay N.H. Soc. *25:* 200. Bankachon, Victoria Province, Tenasserim.

(?) 1917. *Tupaia belangeri tenaster* Thomas, J. Bombay N.H. Soc. *25:* 201. Tagoot, Great Tenasserim River, Tenasserim.

TUPAIA GLIS CAMBODIANA Kloss, 1919

1919. *Tupaia glis cambodiana* Kloss, J. N.H. Soc. Siam, *3:* 357. Klong Yai, South-East Siam.

TUPAIA GLIS OLIVACEA Kloss, 1919

1919. *Tupaia glis olivacea* Kloss, J. N.H. Soc. Siam, *3:* 358. Pak Bu, near Tachin, Central Siam.

Tupaia glis assamensis Wroughton, 1921

1921. *Tupaia belangeri assamensis* Wroughton, J. Bombay N.H. Soc. *27:* 599. Mokokchung, 5,000 ft., Naga Hills, Assam. Range includes Manipur.

Tupaia glis cochinchinensis Robinson & Kloss, 1922

1922. *Tupaia glis cochinchinensis* Robinson & Kloss, Ann. Mag. N.H. *9:* 87. Trangbom, 30 miles east of Saigon, Cochin-China.

Tupaia glis annamensis Robinson & Kloss, 1922

1922. *Tupaia dissimilis annamensis* Robinson & Kloss, Ann. Mag. N.H. *9:* 87. Daban, 650 ft., Southern Annam, Indo-China.

Tupaia glis versurae Thomas, 1922

1922. *Tupaia belangeri versurae* Thomas, J. Bombay N.H. Soc. *28:* 428. Dening, 2,250 ft., Mishmi Hills, North Assam.

Tupaia glis lepcha Thomas, 1922

1922. *Tupaia belangeri lepcha* Thomas, J. Bombay N.H. Soc. *28:* 428. Narbong, near Darjeeling, 2,000 ft. Ranges to Bhutan Duars.

Tupaia glis brunetta Thomas, 1923

1923. *Tupaia belangeri brunetta* Thomas, J. Bombay N.H. Soc. *29:* 84. King Island, Mergui Archipelago.

Tupaia nicobarica Zelebor, 1869 Nicobar Tree-Shrew

Approximate distribution of species: Nicobar Islands, Bay of Bengal.

Tupaia nicobarica nicobarica Zelebor, 1869

1869. *Cladobates nicobaricus* Zelebor, Reise Novara, Zool. Theil, *1:* 17, pl. 1, figs. 1, 2, 3, and pl. 2. Great Nicobar, Nicobar Islands.

Tupaia nicobarica surda Miller, 1902

1902. *Tupaia nicobarica surda* Miller, Proc. U.S. Nat. Mus. *24:* 774. Little Nicobar, Nicobar Islands.

Tupaia minor Günther, 1876 Gunther's Tree-Shrew

Approximate distribution of species: Malay States, Sumatra, Borneo; north into South Siam.

(Tupaia minor minor Günther, 1876. Extralimital)

1876. *Tupaia minor* Günther, P.Z.S. 426. Borneo, mainland opposite Island of Labuan.

Tupaia minor malaccana Anderson, 1879

1879. *Tupaia malaccana* Anderson, Zool. Res. Yunnan, 134, pl. 7. Malacca. Chasen (1940, 10) quotes two immature examples of *T. minor* from Koh Lak, South-West Siam. We are unable to trace this locality, but have reason to believe it is just inside our region, and extralimital to the part of Peninsular Siam covered by Chasen.

Status not sure:

TUPAIA SIAMENSIS Gyldenstolpe, 1916

1916. *Tupaia siamensis* Gyldenstolpe, K. Svenska Vetensk. Akad. Handl. *57*, 2: 20. Koh Lak, Siamese Malaya. From descriptions it is much like *T. minor* except for considerably larger size, but too small for *nicobarica* (head and body 145 mm., tail 175 mm., hindfoot 42 mm.). There are no dental details in the original description.

Genus **ANATHANA** Lyon, 1913

1913. *Anathana* Lyon, Proc. U.S. Nat. Mus. *45:* 120. *Tupaia ellioti* Waterhouse.

1 species: *Anathana ellioti*, page 13

Lyon divided this genus into three nominal species, but we doubt whether they are really more than well differentiated races of the earliest named form.

Anathana ellioti Waterhouse, 1850 — Madras Tree-Shrew

Approximate distribution of species: Eastern Ghats, Madras, Bihar, Central Provinces, Surat District, Bombay (part), in Peninsular India.

ANATHANA ELLIOTI ELLIOTI Waterhouse, 1850

1850. *Tupaia ellioti* Waterhouse, P.Z.S. *1849:* 107, pl. Mamm. 13. Hills between Cuddapah and Nellore, Eastern Ghats, India. Range: Eastern Ghats and Shevaroy Hills, India.

ANATHANA ELLIOTI WROUGHTONI Lyon, 1913

1913. *Anathana wroughtoni* Lyon, Proc. U.S. Nat. Mus. *45:* 123. Mandvi, near Bombay, India. Range: Region of Satpura Hills, and Dangs, near Bombay, Western India.

ANATHANA ELLIOTI PALLIDA Lyon, 1913

1913. *Anathana pallida* Lyon, Proc. U.S. Nat. Mus. *45:* 124. Munbhum, Bihar, India. Range: Raipur in Central Provinces north-eastwards as far as the Ganges, India.

Genus **DENDROGALE** Gray, 1848

1848. *Dendrogale* Gray, P.Z.S. 23. *Hylogalea murina* Schlegel & Müller.

1 species in the area covered by this list:

Dendrogale murina, page 14

Lyon divided this genus into two groups. The *murina* group is characterized as having light colour, face markings present, and small claws. *D. murina* was supposed to have come from Borneo, and the Indo-Chinese species is currently called *D. frenata*. However, Chasen, 1940, *Handlist Malaysian Mammals*, 10, states: "*Dendrogale murina* . . . said to have come from Pontianak, West Borneo, seems a very doubtful species

i.e., of doubtful occurrence in the Malaysian region); it has never again turned up in Borneo and the type is so very like the Indo-Chinese *frenata* that I have dropped the name from the Malaysian list." Lyon (p. 131) suggests that there is "just a possibility that the type of *murina* is an example of *frenata* wrongly labelled as coming from Pontianak, Borneo". He states that Dr. W. L. Abbott, with much careful collection in the neighbourhood of the supposed (Bornean) type locality, failed to secure additional specimens of *murina*. It seems logical, therefore, to adopt the name *murina*, which antedates *frenata* by seventeen years, for the Indo-Chinese species.

Dendrogale murina Schlegel & Müller, 1845 Northern Smooth-tailed Tree-Shrew

Approximate distribution of species: Cambodia, Annam, Cochin-China, in Indo-China.

Dendrogale murina Schlegel & Müller, 1845

1845. *Hylogalea murina* Schlegel & Müller, Verh. Nat. Gesch. Ned. Overz. Bezitt. 167, pl. 26, fig. 5; pl. 27, figs. 17–18. Supposed to be from Pontianak, West Borneo (error ?).

(?) 1860. *Tupaia frenata* Gray, Ann. Mag. N.H. *6:* 217. Cambodia, Indo-China.

FAMILY MACROSCELIDIDAE

Genus: *Elephantulus*, page 15

This family is principally from South and East Africa, but one of the species occurs in Morocco and Algeria. The genus differs from those tropical genera which antedate it roughly as follows. In *Rhynchocyon*, which contains large species, the hallux is absent; the dentition is abnormal, in that the upper incisors are reduced to one, which is nearly vestigial, so that there are no functional front teeth in front of the canine, which is conspicuously enlarged and dominant. In the other genera there are three upper incisors and the upper canine is not extremely dominant. *Petrodromus* contains large species with no hallux and with normal dentition. *Macroscelides* contains small species with the hallux small but clawed and present, and the bullae enormously enlarged. *Elephantulus* is like *Macroscelides* but with quite normal, small bullae. Usually it has ten lower (and ten upper) cheekteeth, thereby differing from *Nasilio* which is closely allied but which has normally eleven lower cheekteeth. Perhaps *Nasilio* is only a subgenus of *Elephantulus*.

The Palaearctic species of *Elephantulus* is the first specific name in the genus. There are three rather well-defined groups of species in British Museum material of *Elephantulus*. *E. intufi* from South Africa stands apart from all the remainder in having the upper P 3 (the fifth tooth from the back) large, four-cusped and molariform. For this, the subgeneric name *Elephantomys* Broom, 1937, is available. *E. rupestris*, South African, the type, has the upper P 3 narrow, sectorial, and usually two-cusped. Two co-types of *E. rupestris* are in the British Museum, and both show the characters clearly. The bullae in these are broken, but in other specimens, and in types of forms named as subspecies of *rupestris*, the bullae are somewhat flattened so that the

external part of the bulla is about on the same level with the median part of the bulla as seen in ventral view. *E. rupestris myurus* and *E. rupestris jamesoni* are subspecies represented in London, and *E. capensis* belongs to the same group. The remainder have the upper P 3 narrow and sectorial but the bullae are not flattened, so that the external part of the bulla is on a much lower level than the median part of bulla as seen in ventral view. *E. rozeti* is the prior name for this group, and the following types have been available for examination: *atlantis*, *clivorum*, *deserti* and *moratus*. Essentially similar forms are represented by the types of *peasei* and *somalicus* (respectively from Abyssinia and Somaliland), *boranus*, *delicatus* and *dundasi* (all from Kenya), *ocularis*, *pulcher* and *renatus* (all from Tanganyika). The type of *edwardsii* has P 3 as in *rupestris*, but the bullae are broken. All these forms are listed by G. Allen (1939).

Genus **ELEPHANTULUS** Thomas & Schwann, 1906

1906. *Elephantulus* Thomas & Schwann, Abstr. P.Z.S., No. 33, 10. P.Z.S. 577. *Macroscelides rupestris* Smith, from the Cape Province.

1937. *Elephantomys* Broom, S. Afr. J. Sci. *33:* 758. *E. langi* Broom from cave deposits at Schurveberg, Transvaal. Valid as a subgenus, to include also the living species *E. intufi* Smith from the West Transvaal.

1 species in the area covered by this list:
Elephantulus rozeti, page 15

Elephantulus rozeti Duvernoy, 1833 North African Elephant-Shrew

Approximate distribution of species: Morocco and Algeria. Closely allied forms (subspecies ?) inhabit Abyssinia, Somaliland, Kenya and Tanganyika.

ELEPHANTULUS ROZETI ROZETI Duvernoy, 1833

1833. *Macroscelides rozeti* Duvernoy, Mém. Soc. Hist. Nat. Strasbourg, *1*, 2: art. 4, 18, pls. 1, 2. Near Oran, Algeria. Range: Northern Algeria, Oran, Northern Rif.

ELEPHANTULUS ROZETI DESERTI Thomas, 1901

1901. *Macroscelides rozeti deserti* Thomas, Ann. Mag. N.H. *8:* 155. Near Jebel Bourzel, Biskra, Algeria.

ELEPHANTULUS ROZETI ATLANTIS Thomas, 1913

1913. *Elephantulus rozeti atlantis* Thomas, Novit. Zool. *20:* 587. Northern slope of Great Atlas of Morocco, south of Seskawa, Ain Moussa.

ELEPHANTULUS ROZETI MORATUS Thomas, 1913

1913. *Elephantulus rozeti moratus* Thomas, Novit. Zool. *20:* 587. Jebel Chedar, about 80 km. south-east of Mazagan, South-Western Morocco. Range includes desert of Zragna, Morocco.

ELEPHANTULUS ROZETI CLIVORUM Thomas, 1913

1913. *Elephantulus deserti clivorum* Thomas, Novit. Zool. *20:* 588. Guelt-es-Stel, 900 m., plateau of Eastern Algeria. Range: as above, also Matmata, Southern Tunis, and Maafa, Eastern Algeria.

FAMILY ERINACEIDAE

Genera: *Echinosorex*, page 17
Erinaceus, page 19
Hemiechinus, page 23
Hylomys, page 17
Neotetracus, page 18
Paraechinus, page 26

This family is divided into two subfamilies: the Echinosoricinae, containing *Neotetracus*, *Echinosorex* and *Hylomys*, and chiefly Indomalayan in distribution; and the Erinaceinae, containing the true Hedgehogs, *Erinaceus*, *Paraechinus*, *Hemiechinus*, which is principally Palaearctic and African in distribution. Formerly the Hedgehogs were all referred to a single genus *Erinaceus* Linnaeus, and this classification is still followed by some authors, for instance by Bobrinskii (1944). Thomas, 1918, *Ann. Mag. N.H. 1:* 193–196, divided these animals into five genera. Of these we are not prepared to admit *Atelerix* as more than a subgenus; and certainly not *Aethechinus* as anything but a synonym of *Atelerix* which was restricted by Thomas to species in which the small hallux is absent. This character is now known not to be constant: see J. A. Allen, 1922, *Bull. Amer. Mus. N.H. 47:* 13. But there seems a generic division in the formation of the bullae between *Erinaceus* and *Hemiechinus*. From the last, *Paraechinus* is not so easily distinguished, and it might be regarded as only a subgenus of *Hemiechinus*. The genera admitted here may be keyed as follows:

1. Coat not definitely spiny; 10 or 11 lower teeth (40 or 44 teeth in all). Tail at least visible externally. (Subfamily ECHINOSORICINAE) ——2
   Coat densely spiny dorsally. Eight lower teeth (36 teeth in all). Tail not, or scarcely, apparent. (Subfamily ERINACEINAE) ——4

2. Coat rough and harsh; much larger animal, head and body 265–345 mm. in B.M. material. Colour striking; typically mixed black and white, with black stripe round eye, and with tail dark basally, pale terminally. (White forms occur.) Tail long, averages over 80 per cent. of head and body. First upper incisor and upper canine strong and well differentiated.
   ECHINOSOREX
   Coat soft; smaller animals, head and body in adults 143 mm. at most, and usually less, in the specimens examined. Colour drab; appearance very reminiscent of certain Voles (Microtinae). Tail short, averages 54 per cent., or less, of head and body in B.M. material. Upper canine weak (*Hylomys*) or scarcely differentiated (*Neotetracus*). ——3

3. Tail averages about 54 per cent. of head and body, and is usually over 60 mm. in length. Normally 10 upper and lower teeth. *NEOTETRACUS*
   Tail very short, averages 17 per cent. of head and body, and reaches 30 mm. in only one specimen of the material examined. Normally 11 upper and lower teeth. *HYLOMYS*

4. "Pterygoids inflated, their cavity communicating with that of bullae. Parapterygoid fossae shallow. Postglenoid fossae even larger and more hollowed out than *Hemiechinus*" (Thomas). *PARAECHINUS*
   Pterygoids and bullae more normal. ——5

5. Postglenoid process as large as mastoid process, hollow internally. *HEMIECHINUS*
   Postglenoid process small, not hollowed out, and much surpassed by the mastoid process. *ERINACEUS*

Subfamily Echinosoricinae

Genus **ECHINOSOREX** Blainville, 1838

1827. *Gymnura* Lesson, Man. Mamm. 171. *Gymnura rafflesii* Lesson = *Viverra gymnura* Raffles. Not of Kuhl, 1824.
1838. *Echino-sorex* Blainville, C.R. Acad. Sci. Paris, *6:* 742. *Viverra gymnura* Raffles.
1840. *Echinosorex* Blainville, Ostéogr., Insectiv. 109. Substitute for *Echino-sorex.*

1 species: *Echinosorex gymnurus*, page 17

Echinosorex gymnurus Raffles, 1821 Moonrat or Raffles' Gymnura

Approximate distribution of species: Tenasserim, Lower Siam, Malay States, Sumatra, Borneo.

(Echinosorex gymnurus gymnurus Raffles, 1821. Extralimital)
1821. *Viverra gymnura* Raffles, Trans. Linn. Soc. London, *13:* 272. Bencoolen, Sumatra. (Ranges to Malay Peninsula.)

Echinosorex gymnurus birmanicus Trouessart, 1879
1879. *Gymnura birmanica* Trouessart, Rev. Zool. Paris, 240. Bankachon, Southern Tenasserim.
1888. *Gymnura rafflesi* Blanford, Fauna Brit. India, Mamm. 220, not of Lesson, 1827, which = the typical race from Sumatra.
1909. *Gymnura gymnura minor* Lyon, Proc. U.S. Nat. Mus. *36:* 453. Trang, 2,000 ft., Lower Siam.

Genus **HYLOMYS** Müller, 1839

1839. *Hylomys* Müller in Temminck, Verh. Nat. Gesch. Nederl. Overz. Bezitt., Zool. Zoogd. 50. *Hylomys suillus* Müller.

1 species: *Hylomys suillus*, page 17

Hylomys suillus Müller, 1839 Lesser Gymnura

Approximate distribution of species: Yunnan (Burmese Border), Burma, Indo-China, Siam, Malay States, Tioman Island, Sumatra, Java, Borneo.

Hylomys suillus suillus Muller, 1839. Extralimital)

1839. *Hylomys suillus* Müller in Temminck, Verh. Nat. Gesch. Nederl. Overz. Bezitt., Zool. Zoogd. 25, 50. Java.

Hylomys suillus peguensis Blyth, 1859

1859. *Hylomys peguensis* Blyth, J. Asiat. Soc. Bengal, *28:* 294. Pegu, Lower Burma.

Hylomys suillus siamensis Kloss, 1916

1916. *Hylomys siamensis* Kloss, J.N.H. Soc. Siam, *2:* 10. Hinlap, 900 ft., Eastern Siam. Range: to Annam, Laos (Indo-China).

Hylomys suillus microtinus Thomas, 1925

1925. *Hylomys suillus microtinus* Thomas, P.Z.S. 497. Thai-nien, Tonkin, Indo-China. Ranges to Laos, but probably not occurring with the last. Osgood (1932) regarded both forms as races of *H. suillus*.

Genus **NEOTETRACUS** Trouessart, 1909

1909. *Neotetracus* Trouessart, Ann. Mag. N.H. *4:* 389. *Neotetracus sinensis* Trouessart.

1 species: *Neotetracus sinensis*, page 18

Neotetracus sinensis Trouessart, 1909 Shrew-Hedgehog

Approximate distribution of species: Szechuan and Yunnan, in China; Northern Burma; Indo-China.

Neotetracus sinensis sinensis Trouessart, 1909

1909. *Neotetracus sinensis* Trouessart, Ann. Mag. N.H. *4:* 390. Tatsienlu, 2,545 m., Szechuan, China. Range: Szechuan, Yunnan.

Neotetracus sinensis fulvescens Osgood, 1932

1932. *Neotetracus sinensis fulvescens* Osgood, Field Mus. Publ. Zool. *18:* 239. Chapa, Tonkin, Indo-China.

Neotetracus sinensis cuttingi Anthony, 1941

1941. *Neotetracus sinensis cuttingi* Anthony, Field Mus. Publ. Zool. *27:* 58. Hpimaw Road, above Hpimaw fort, 9,000 ft., North-Eastern Burma.

Subfamily Erinaceinae

Authors are not yet agreed on how many species of Hedgehogs should be recognized. For instance, Ognev (1928), in his work on the Mammals of the U.S.S.R., recognized four genera containing thirteen species in that region; whereas Bobrinskii and Kuzyakin (1944) retain in the same region one genus with only four species.

The late J. L. Chaworth-Musters was for many years doing preparatory work at the British Museum for a checklist of Palaearctic Mammals. Through the kindness of his executors we have most or all of his notes in our possession, including the synonymy of all the Palaearctic Hedgehogs, and we propose here to adopt most of his classification, which retains the three genera which we think it reasonable to adopt, and recognizes two or three species in each of them.

Genus **ERINACEUS** Linnaeus, 1758

1758. *Erinaceus* Linnaeus, Syst. Nat. 10th ed. *1:* 52. *Erinaceus europaeus* Linnaeus.
1848. *Atelerix* Pomel, Arch. Sci. Phys. Nat. Genève, *9:* 251. *Erinaceus albiventris* Wagner, the Senegambian Hedgehog. Valid as a subgenus.
1866. *Peroëchinus* Fitzinger, S.B. Akad. Wiss. Wien, *54:* 565, 1866, and *56:* 856, 1867. *Erinaceus pruneri* Wagner from the Sudan. (=*Atelerix*.)
1868. *Herinaceus* Mina-Palumbo, Ann. Agric. Sicil. *12:* 37. (*N.V.*) (Emendation.)
1918. *Aethechinus* Thomas, Ann. Mag. N.H. *1:* 194. *Erinaceus algirus* Duvernoy & Lereboullet.

2 species in the area covered by this list:
Erinaceus algirus, page 23
Erinaceus europaeus, page 19

The first-named belongs to the subgenus *Atelerix*. It differs from normal species of that subgenus in retaining the small hallux which is, however, not constantly suppressed in the restricted *Atelerix* of Thomas. In the subgenus *Atelerix* the prior name is *E. frontalis* Smith, 1831, from South Africa, but *E. algirus* may be shown to be distinct from that by the fact that there is an average size distinction between the two species. Thus, of ten specimens of *E. frontalis* examined, only one reaches 52 mm. in length of skull; all the others fail to reach 50 mm. But we possess only two specimens of *E. algirus* (in a moderate series) which are less than 51 mm. in length.

Miller, 1912, *Cat. Mamm. West Europe*, 115, contrasts the characters of the two Palaearctic species here admitted.

Chaworth-Musters used to put all named forms into synonymy, and did not recognize any subspecies. Whilst this list is based on his notes, we do not feel that such an arrangement would be acceptable to the majority of zoologists, and so have listed those forms which are likely to be of subspecific value. Bobrinskii divides *E. europaeus* into three groups of races typified by *europaeus*, *roumanicus* and *amurensis* (all of which were regarded as species by Ognev).

Subgenus *ERINACEUS* Linnaeus, 1758

Erinaceus europaeus Linnaeus, 1758 European Hedgehog

Approximate distribution of species: Europe, widely distributed, west to Britain and Ireland, north to Norway and Sweden, south to Crete, Greece, Italy, Sicily, Spain, and including Denmark, Holland, Belgium, France, Germany, Switzerland, Bohemia, Hungary, Yugoslavia, Rumania, Poland, etc. Russia: roughly from north

of Lake Ladoga eastwards, south to the Crimea and Caucasus; Central Siberia in part, eastwards roughly to Tomsk district, south to River Emba and North-West Kazakstan; Amur and Ussuri regions in Pacific Siberia. Eastern China: states of Chihli, Shensi, Shansi, Hupeh, Shantung, Kiangsu, Anhwei; Manchuria. Asia Minor: Palestine.

ERINACEUS EUROPAEUS EUROPAEUS Linnaeus, 1758

1758. *Erinaceus europaeus* Linnaeus, Syst. Nat. 10th ed. *1:* 52. Wamlingbo, South Gothland Island, Sweden (see Thomas, 1911, P.Z.S. 142).
1779. *Hystrix erinaceus* Blumenbach, Handbuch Naturg. 72. Germany.
1845. *Erinaceus caniceps* H. Smith, Naturalist's Libr. (Jardine's), 2nd ed. *15:* 148. Forest of Soignies, near Brussels, Belgium.
1897. *Erinaceus echinus* Schulze, Helios Berlin, *14:* 91. Substitute for *europaeus*.
1900. *Erinaceus europaeus occidentalis* Barrett-Hamilton, Ann. Mag. N.H. *5:* 362. Haddington, Scotland.
1900. *Erinaceus europaeus typicus* Barrett-Hamilton, *loc. cit.* 363.
1912. *Erinaceus suillus* Miller, Cat. Mamm. Western Europe, 120. France, quoted as Geoffroy, Cat. Mammif. Mus. Nat. H.N. 67, but according to a note in Chaworth-Musters MS., this name was never published by Geoffroy in 1803; the proofs only are known.
1912. *Erinaceus caninus* Miller, *loc. cit.* France. Quoted as Geoffroy, Cat. Mammif. Mus. Nat. H.N. 68, but according to note in Chaworth-Musters MS. this name was never published by Geoffroy in 1803.

Range: Western Central Europe from Scotland, Southern Norway and Central Sweden to Pyrenees and Alps, west to Ireland.

ERINACEUS EUROPAEUS CONCOLOR Martin, 1838

1838. *Erinaceus concolor* Martin, P.Z.S. *1837:* 103. Near Trebizond, Asia Minor.
1907. *Erinaceus ponticus* Satunin, Zool. Anz. *31:* 233. Kobuleti, 22 versts north of Batum, Georgia, Transcaucasia.

Range: Transcaucasia, Asia Minor, to Lebanon, Syria (B.M.).

Ognev regarded this as a species.

ERINACEUS EUROPAEUS AMURENSIS Schrenk, 1859

1859. *Erinaceus europaeus* var. *amurensis* Schrenk, Reisen im Amur-Lande, *1*, pl. iv. fig. 2: 100–105. Gulssoja, near Aigun, on Amur river, Northern Manchuria, (5 Jan. 1859, see verso 2nd title page.)
1903. *Erinaceus orientalis* J. Allen, Bull. Amer. Mus. N.H. *19:* 179. Vladivostock, Eastern Siberia.
1907. *Erinaceus ussuriensis* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 170. Sidemi, Southern Ussuri, Eastern Siberia.

Range: Korea, Manchuria, South-Eastern Russian Asia.

ERINACEUS EUROPAEUS DEALBATUS Swinhoe, 1870

1870. *Erinaceus dealbatus* Swinhoe, P.Z.S. 450. Pekin, Chihli, China.
1907. *Erinaceus chinensis* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 173. Tyntza-intza, Khingan Mountains, Manchuria.

1907. *Erinaceus kreyenbergi* Matschie, Exped. Filchner, Mamm. 135. Type purchased in market place, Shanghai, China.
1907. *Erinaceus tschifuensis* Matschie, *loc. cit.* 137. Chefoo, Shantung, China.
1907. *Erinaceus hanensis* Matschie, *loc. cit.* 138. Hankow, Hupeh, China.
1908. *Erinaceus hughi* Thomas, Abstr. P.Z.S. 44; 1909, P.Z.S. *1908:* 966. Paochi, Shensi, China.
1926. *Hemiechinus manchuricus* Mori, Annot. Zool. Jap. *11:* 108. Koshurei, South Manchuria. Status *fide* Kuroda.

Range: China, from Chihli, Hunan, Anhwei, Hupeh, Kiangsu, Shantung, Shensi, to Manchuria (part).

Erinaceus europaeus hispanicus Barrett-Hamilton, 1900

1900. *Erinaceus europaeus hispanicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 363. Seville, Spain. Range: Iberian Peninsula.

Erinaceus europaeus italicus Barrett-Hamilton, 1900

1900. *Erinaceus europaeus italicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 364. Siena, Italy. Range: Italy, Ticino in Switzerland, Sardinia.

Erinaceus europaeus roumanicus Barrett-Hamilton, 1900

1900. *Erinaceus europaeus roumanicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 365. Gageni, Prahova, Rumania.
1901. *Erinaceus danubicus* Matschie, S.B. Ges. Naturf. Fr. Berlin, 9, 229. Prundu, Rumania.
1915. *Erinaceus europaeus roumanicus* var. *kievensis* Charlemagne, Mamm. of the neighbourhood of Kiev, 37. (*N.V.*, *fide* Ognev.) Neighbourhood of Kiev, Russia.
1930. *Erinaceus rumanicus rumanicus* (morpha) *bolkayi* Martino, Zap. Russk. Nauch. Inst. Byelgrad, *2:* 60. Cetinje, Montenegro, Yugoslavia.
1933. *Erinaceus roumanicus roumanicus drozdovskii* Martino, Prirod. Razpr. *2:* 56. Kočane, Vardar, Macedonia, Southern Yugoslavia.

Range: Eastern Germany, Northern Bohemia, Hungary, Rumania, Yugoslavia, Greece, Poland, Southern and Central Russia, east to Orenberg and Tomsk Govt. in Siberia, south to Crimea, Northern Caucasus.

Regarded as a species by Ognev and Miller; as a race of *europaeus* by Bobrinskii, and in synonymy of that species in Chaworth-Musters' MSS.

Erinaceus europaeus consolei Barrett-Hamilton, 1900

1900. *Erinaceus europaeus consolei* Barrett-Hamilton, Ann. Mag. N.H. *5:* 366. Near Palermo, Sicily.

Erinaceus europaeus transcaucasicus Satunin, 1905

1905. *Erinaceus europaeus transcaucasicus* Satunin, Mitt. Kaukas. Mus. *2:* 106, 281. Ordubad on the Araxes river, Transcaucasia. Ognev referred this form to *roumanicus* as a race, and said it occurred in Northern and Southern Caucasus, and that the next was probably a synonym.
1918. *Erinaceus roumanicus sacer* Thomas, Ann. Mag. N.H. *2:* 212. Neighbourhood of Jerusalem, Palestine.

ERINACEUS EUROPAEUS NESIOTES Bate, 1906

1906. *Erinaceus europaeus nesiotes* Bate, P.Z.S. *1905*, 2: 316. Near Gonia, Western Crete.

ERINACEUS EUROPAEUS ABASGICUS Satunin, 1907

1907. *Erinaceus ponticus abasgicus* Satunin, Zool. Anz. *31:* 234. Zebeldinsk part of Abchasia on the upper and middle course of River Kodov, Western Caucasus. Ognev regarded this as a subspecies of *concolor*.

ERINACEUS EUROPAEUS MIODON Thomas, 1908

1908. *Erinaceus miodon* Thomas, Abstr. P.Z.S. 44; 1909, P.Z.S. *1908:* 965. Yulinfu, Shensi, 4,000 ft., China.

ERINACEUS EUROPAEUS RHODIUS Festa, 1914

1914. *Erinaceus europaeus rhodius* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *29*, No. 686, 3. Koskino, Island of Rhodes, Eastern Mediterranean.

ERINACEUS EUROPAEUS MERIDIONALIS Altobello, 1920

1920. *Erinaceus europaeus meridionalis* Altobello, Fauna Abruzzo e Molise, Mamm. *1:* 13. Abruzzi, Italy.

ERINACEUS EUROPAEUS KOREANUS Lönnberg, 1922

1922. *Erinaceus koreanus* Lönnberg, Ann. Mag. N.H. *9:* 624. Chosen, Korea.

(?) 1922. *Erinaceus amurensis koreensis* Mori, Ann. Mag. N.H. *10:* 616. Kaijô, north of Seoul, Korea.

ERINACEUS EUROPAEUS CENTRALROSSICUS Ognev, 1926

1926. *Erinaceus europaeus centralrossicus* Ognev, Uchen. Zap. Sev. Kavkaz. Inst. *1:* 37. Sichevsk, Smolensk Govt., Russia.

1928. *Erinaceus europaeus centralrossicus* (natio) *pallidus* Ognev, Mamm. Eastern Europe, Northern Asia, *1:* 96. Tyumensk district, Tobolsk Govt., Western Siberia.

ERINACEUS EUROPAEUS DISSIMILIS Stein, 1930

1930. *Erinaceus roumanicus dissimilis* Stein, Z. Säuget, *4:* 240. Klein-Stürlack, Eastern Prussia, Germany.

Incertae sedis

Erinaceus sibiricus Erxleben, 1777, Syst. Regn. Anim. 172. Siberia (based on Seba, 1734, Thesaurus, *1:* 79, pl. 49, figs. 4, 5).

ERINACEUS or HEMIECHINUS DAUURICUS Sundevall, 1842

This is a very little known species. G. Allen and later Bobrinskii refer it to *Hemiechinus;* Bobrinskii suggests it may prove to be a well marked subspecies of *H. auritus*. Ognev regarded it as a species of *Erinaceus*. A pencil note in Chaworth-Musters' MSS. says that *E. dauuricus* is a genuine *Erinaceus*, a subspecies of *E. europaeus*, but that *Hemiechinus przewalski* is *H. albulus?* G. Allen lists the latter as a synonym of *dauuricus*.

1842. *Erinaceus dauuricus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1841:* 237. Dauuria, Transbaikalia.
(?) 1907. *Hemiechinus przewalskii* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 181. Northern China. G. Allen recorded this form from Mongolia, but had seen no specimens.

Subgenus *ATELERIX* Pomel, 1848 (Synonym: *Aethechinus* Thomas, 1918)

Erinaceus algirus Duvernoy & Lereboullet, 1842 Algerian Hedgehog

Approximate distribution of species: Morocco, Algeria, Libya, Canary Islands; South-Eastern France, Spain, Balearic Islands.

Erinaceus algirus algirus Duvernoy & Lereboullet, 1842

1842. *Erinaceus algirus* Duvernoy & Lereboullet, Mém. Soc. Hist. Nat. Strasbourg, *3*, 2, art. 1:14. Algeria, no exact locality; Oran given by Miller (1912) and G. Allen (1939).
1882. *Erinaceus fallax* Dobson, Monogr. Insectivora, 9. Sfax, Tunisia (type in B.M.).
Range: Morocco to Libya, Spain, South-Eastern France.

Erinaceus algirus vagans Thomas, 1901

1901. *Erinaceus algirus vagans* Thomas, P.Z.S. *1901*, 1: 38. San Cristobal, Minorca, Balearic Islands. Range includes Majorca.

Erinaceus algirus caniculus Thomas, 1915

1915. *Erinaceus algirus caniculus* Thomas, Ann. Mag. N.H. *16:* 152. Toston, Fuerteventura Island, Eastern Canary Islands.
(?) 1877. *Erinaceus krugi* Peters, S.B. Ges. Naturf. Fr. Berlin, 78. Habitat unknown, probably West Africa or Southern Europe. (Type specimen killed in Mayaguez, Porto Rico, ? introduced.)

Erinaceus algirus lavaudeni Cabrera, 1928

1928. *Aethechinus algirus lavaudeni* Cabrera, Bol. Soc. Esp. H.N. *28:* 454. Mogador, Morocco.

Genus **HEMIECHINUS** Fitzinger, 1866

1842. *Ericius* Sundevall, K. Svenska Vetensk. Akad. Handl. *1841:* 223. *Erinaceus auritus* Gmelin. Not of Tilesius, 1813.
1866. *Hemiechinus* Fitzinger, S.B. Akad. Wiss. Wien, *54*, 1: 565; *ibid*, 1867, *56:* 858. *Erinaceus platyotis* Sundevall = *Erinaceus aegyptius* Fischer.
(?) 1928. *Erinaceolus* Ognev, Mamm. E. Europe, N. Asia, *1:* 168. *Hemiechinus microtis* Laptev.

2 species: *Hemiechinus auritus*, page 24
Hemiechinus megalotis, page 26

Chaworth-Musters was going to retain three species in this genus, *H. auritus*, *H. collaris* (to include *albulus*, *turanicus*, *minor*, *alaschanicus*, *persicus*, *turfanicus*, *holdereri*, *major*, *insularis*), and *H. megalotis*. Bobrinskii says all these forms represent one species; Ognev further subdivided forms of the genus which occur in the U.S.S.R., and retained several more species. The British Museum material gives the following cranial measurements: for *H. megalotis*, length of skull 52–56.9 mm. (average 54 mm., two specimens); *H. collaris* as understood by Chaworth-Musters, skull length averages about 47 mm. (46.1–48.6 mm.) (based on specimens of *collaris* from Cutch, Sind, Palanpur, Punjab; of *albulus* from Djarkent, Yarkand, Kashgar, Northern Afghanistan; of *turanicus*, Transcaspia); *H. auritus* as restricted by Chaworth-Musters from Egypt, Palestine, Cyprus, Iraq, Cyrenaica, has the skull length averaging 43.9 mm. (42–44.8 mm.). The type of *calligoni* has also been examined. In our material, therefore, there is an absolute difference in size of skull between the three groups, but in Ognev's *Key to the Mammals of Eastern Europe*, etc., it will be found that there is a considerable overlap between *auritus* and "*collaris*" as listed by Chaworth-Musters, and we think it best to merge these two species, following Bobrinskii. Ognev's form *major* can have the skull as large as in *megalotis*. Our specimens of *megalotis* are from Kandahar and Baluchistan.

Hemiechinus auritus Gmelin, 1770 Long-eared Hedgehog

Approximate distribution of species: Egypt, Cyrenaica; Palestine, Cyprus, Asia Minor, Persia, Afghanistan; Punjab, Cutch, Sind, Rajputana, Palanpur in India; Chinese Turkestan, Mongolia; Russian Turkestan, where widely distributed north to Altai steppe; Caucasus and South-Eastern Russia (Volga steppes as far north as Kuibyshev, Don steppes). ? Ceylon (B.M. 7.1.21.1, "*gravi*" is labelled from Wellawatte, Ceylon).

Hemiechinus auritus auritus Gmelin, 1770

1770. *Erinaceus auritus* Gmelin, Nov. Comment. Acad. Sci. Petrop. *14:* 519. Astrakhan, South-Eastern Russia.

1842. *Erinaceus auritus caspicus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1841*, 237. Emendation of *auritus*.

Range: European range of the species and Kazakstan steppes.

Hemiechinus auritus aegyptius Fischer, 1829

1829. *Erinaceus aegyptius* Fischer, Syn. Mamm. 262. Egypt. Based on *E. aegyptius* Geoffroy, Cat. Mus. H.N. Paris, 1803, which was never published; proof sheets only are known (Chaworth-Musters).

1833. *Erinaceus libycus* Ehrenberg in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* sig. k, *recto* (footnote). Desert near Alexandria, Egypt.

1842. *Erinaceus* (*Ericius*) *platyotis* Sundevall, K. Svenska Vetensk. Akad. Handl. *1841*, 232. Egypt.

1882. *Erinaceus frontalis* Dobson, Monogr. Insect. *1:* 18, not of Smith, 1831. See Anderson & de Winton, Mamm. Egypt, 1902, 159, as to status.

Range: Egypt, Cyrenaica.

HEMIECHINUS AURITUS COLLARIS Gray, 1830

1830. *Erinaceus collaris* Gray in Hardwicke, Illustr. Indian Zool. *1*, pl. 8. Doab. between the Rivers Jumna and Ganges, India. (See Wroughton, 1910, J, Bombay N.H. Soc. *20:* 81.)
1832. *Erinaceus spatangus* Bennett, P.Z.S. 123. Himalayan mountains.
1832. *Erinaceus grayi* Bennett, P.Z.S. 124. Himalayan mountains.
1833. *Erinaceus indicus* Royle, Illustr. Bot. Himalaya, 6. Delhi, India.

Range: Northern India as listed under the species; Afghanistan (B.M.).

HEMIECHINUS AURITUS ALBULUS Stoliczka, 1872

1872. *Erinaceus* (*Hemiechinus*) *albulus* Stoliczka, J. Asiat. Soc. Bengal, *41*, 2: 226. Langur, near Sandshu, Yarkand, Chinese Turkestan.

HEMIECHINUS AURITUS SYRIACUS Wood, 1876

1876. *Erinaceus syriacus* Wood, Bible Animals, 83. Palestine. This name is available if the Palestine form is recognizable.

HEMIECHINUS AURITUS CALLIGONI Satunin, 1901

1901. *Erinaceus calligoni* Satunin, Prot. Obshch. Est. Kazan, No. 192 (misprinted 191), 2. P.Z.S. *1901*, *2:* 284. Village of Aralyk, about 40 versts south of Erivan, Armenia. Range: Daghestan, Transcaucasia.

HEMIECHINUS AURITUS TURANICUS Satunin, 1905

1905. *Erinaceus albulus turanicus* Satunin, Mitt. Kaukas. Mus. *2:* 45, 70. Ferghana, Usbekistan, Russian Turkestan (see Satunin, 1906, Ann. Mus. Zool. Acad. St. Pétersb. *11:* 180.) Range: from Kopet-Dag to Lake Balkash and Semirechyia (Ognev).

HEMIECHINUS AURITUS MINOR Satunin, 1907

1907. *Hemiechinus albulus minor* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 180. Barnaul, Western Siberia.

HEMIECHINUS AURITUS ALASCHANICUS Satunin, 1907

1907. *Hemiechinus albulus alaschanicus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 181. Alashan, Inner Mongolia.

HEMIECHINUS AURITUS PERSICUS Satunin, 1907

1907. *Hemiechinus persicus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 184. Guljander, Persia.

HEMIECHINUS AURITUS BRACHYOTIS Satunin, 1908

1908. *Hemiechinus calligoni brachyotis* Satunin, Mitt. Kaukas. Mus. *4:* 47, 106. Ach-su, Semacha district, Transcaucasia.

HEMIECHINUS AURITUS TURFANICUS Matschie, 1911

1911. *Hemiechinus albulus turfanicus* Matschie in Futterer, Durch Asien, *3*, 5, Zool.: 4 (of reprint). Chami, Sinkiang (Chinese Turkestan).

HEMIECHINUS AURITUS HOLDERERI Matschie, 1922

1922. *Hemiechinus holdereri* Matschie, S.B. Ges. Naturf. Fr. Berlin, 73. Near River Sarin-gol, Gobi Desert, Mongolia.

HEMIECHINUS AURITUS MAJOR Ognev & Heptner, 1928

1928. *Hemiechinus albulus major* Ognev & Heptner, Zool. Anz. *75:* 259. Station Annau, Ashabad, Transcaspia, Russian Turkestan.

HEMIECHINUS AURITUS TURKESTANICUS Ognev, 1928

1928. *Hemiechinus calligoni turkestanicus* Ognev, Mamm. E. Europe, N. Asia, *1:* 130. Station Kara-Usyak, north of Perovsk, Russian Turkestan.

HEMIECHINUS AURITUS INSULARIS Timofejew, 1934

1934. *Hemiechinus albulus insularis* Timofejew, Zool. J. Moscow, *13:* 748, 758. Island of Barsa Kelmes in the Sea of Aral, Russian Central Asia.

Hemiechinus megalotis Blyth, 1845 Afghan Hedgehog

Approximate distribution of species: Baluchistan, Afghanistan and South-Western Russian Turkestan.

HEMIECHINUS MEGALOTIS Blyth, 1845

1845. *Erinaceus megalotis* Blyth, J. Asiat. Soc. Bengal, *14:* 353 (footnote). Kandahar, Afghanistan.

(?) 1926. *Hemiechinus chorassanicus* Laptev, Bull. Univ. Asie Cent. *13:* 115–116. Valley Tchandyr, near Atrek river, Kopet-Dagh, South-Western Russian Turkestan. Bobrinskii suggests this is a cross between *H. auritus* and *Paraechinus hypomelas*; Chaworth-Musters regarded it as a synonym of *H. megalotis*.

Incertae sedis

Hemiechinus russowi Satunin, 1907, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 177. Tchinaz, Samarkand district, south of Tashkent, Russian Turkestan. The skull is unknown. According to Bobrinskii it "does not even represent a very pronounced individual aberration".

Hemiechinus microtis Laptev, 1925, Bull. Univ. Asie Cent. *8:* 66. Tashkent, Russian Turkestan. Type of *Erinaceolus* Ognev. "Only known by two specimens from Tashkent, we regard as a pronounced aberration, all the distinctive features of which are connected with an anomalous under-development of the organ of hearing" (Bobrinskii & Kuzyakin).

Hemiechinus homalacanthus Stroganov, 1941, C.R. Acad. Sci. U.R.S.S. *44, 3:* 120. Kabadiani, Tadjikistan, Russian Turkestan. From descriptions a large form, perhaps representing *H. megalotis*.

Genus **PARAECHINUS** Trouessart, 1879

1879. *Paraechinus* Trouessart, Rev. Zool. Paris, *7:* 242. *Erinaceus micropus* Blyth.

1907. *Macroechinus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. 1906, *11*: 189. *Erinaceus hypomelas* Brandt.

3 species: *Paraechinus aethiopicus*, page 27
Paraechinus hypomelas, page 28
Paraechinus micropus, page 28

There are two distinct groups in this genus, typified by *hypomelas* and *aethiopicus*. Chaworth-Musters was going to retain three species (*micropus* was the third) but did not deal with the Madras form, *nudiventris*. We have two skulls for the last-named which have the zygoma incomplete and apparently lack the jugal, but it does not seem a constant character as the zygoma is complete in a third specimen. Chaworth-Musters' species may be retained and keyed as follows: *nudiventris* is tentatively referred to *micropus*, and *micropus* might well be regarded as an eastern representative of *aethiopicus*.

1. P 3 less reduced, three-rooted. Skull appears long and narrow, narrow in pterygoid region (pterygoid width averages about 51 per cent. or less of length of skull). *Paraechinus hypomelas*
   P 3 single-rooted (occasionally two-rooted), but very reduced. Skull appears wider, and is wider in pterygoid region (pterygoid width averages 54 per cent. or more of length of skull). ——2

2. Pterygoid width very rarely under 25 mm. (only once in fourteen specimens). *Paraechinus aethiopicus*
   Pterygoid width normally less than 25 mm. (fifteen out of sixteen specimens). *Paraechinus micropus*

On South-Western Asiatic and North African forms (in part) see Morrison-Scott, 1939, Novit. Zool. *41:* 202.

Paraechinus aethiopicus Ehrenberg, 1833 Ethiopian Hedgehog

Approximate distribution of species: Morocco, Algeria, Asben, Sudan, Arabia, Iraq.

(Paraechinus aethiopicus aethiopicus Ehrenberg, 1833. Extralimital)

1833. *Erinaceus aethiopicus* Ehrenberg in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* sig. k, *recto* (footnote). Dongola Desert, Sudan.
1839. *Erinaceus sennaariensis* Hedenborg, Isis, *32:* 8, *nom. nud.*
1841. *Erinaceus brachydactylus* Wagner, Schreber Säugeth. Suppl. *2*: 24. Renaming of *aethiopicus*.
1867. *Hemiechinus pallidus* Fitzinger, S.B. Akad. Wiss. Wien, *56*, 1: 866. Senaar, Sudan.

Paraechinus aethiopicus deserti Loche, 1858

1858. *Erinaceus deserti* Loche, Cat. Mamm. Oiseaux Algérie, 20. Southern Sahara, in Oasis of Beni-Mzab, Ouargla, and Tuggurt, Algeria. Ranges to Morocco.

Paraechinus aethiopicus pectoralis Heuglin, 1861

1861. *Hemiechinus pectoralis* Heuglin, Nov. Acta. Leop. Carol. *29:* 22. Petra, Transjordania.

PARAECHINUS AETHIOPICUS DORSALIS Anderson & de Winton, 1901

1901. *Erinaceus dorsalis* Anderson & de Winton, Ann. Mag. N.H. *7:* 42. Hadramaut, Southern Arabia.

PARAECHINUS AETHIOPICUS LUDLOWI Thomas, 1919

1919. *Paraechinus ludlowi* Thomas, J. Bombay N.H. Soc. *26:* 748. Hitt, on the Euphrates, about 100 miles west of Baghdad, Iraq.

PARAECHINUS AETHIOPICUS BLANCALIS Thomas, 1921

1921. *Paraechinus deserti blancalis* Thomas, Ann. Mag. N.H. *8:* 570. Island of Djerba, South-Eastern Tunis.

PARAECHINUS AETHIOPICUS ALBATUS Thomas, 1922

1922. *Paraechinus dorsalis albatus* Thomas, Ann. Mag. N.H. *9:* 144. Tanb Island, Persian Gulf.

PARAECHINUS AETHIOPICUS ONISCUS Thomas, 1922

1922. *Paraechinus oniscus* Thomas, Ann. Mag. N.H. *10:* 307. Fayush, 7 miles north of Sheikh Othman, near Aden, Southern Arabia.

PARAECHINUS AETHIOPICUS ALBIOR Pocock, 1934

1934. *Paraechinus dorsalis albior* Pocock, Ann. Mag. N.H. *14:* 636. Dhimir Wad, Geradun, 960 ft., Southern Arabia.

Paraechinus micropus Blyth, 1846 Indian Hedgehog

Approximate distribution of species: Punjab, Rajputana, Sind, Cutch, Kathiawar, Palanpur and Madras, India.

PARAECHINUS MICROPUS MICROPUS Blyth, 1846

1846. *Erinaceus micropus* Blyth, J. Asiat. Soc. Bengal, *15:* 170. Bhawalpur, Punjab, Northern India.

1867. *Hemiechinus mentalis* Fitzinger, S.B. Akad. Wiss. Wien, *56*, 1: 874. (Gray, 1843, Cat. Mamm. B.M. 81, *nom. nud.*). ? Himalayas.

(?) 1872. *Erinaceus* (*Hemiechinus*) *pictus* Stoliczka, J. Asiat. Soc. Bengal, *41*, 2: 223. Western part of Cutch, India.

Range: as in the species, except Madras.

PARAECHINUS (?) MICROPUS NUDIVENTRIS Horsfield, 1851

1851. *Erinaceus nudiventris* Horsfield, Cat. Mamm. Mus. E. India Co. 136. Madras, Southern India.

Paraechinus hypomelas Brandt, 1836 Brandt's Hedgehog

Approximate distribution of species: Russian Turkestan (Ust-Urt, Turkmenia, Usbekistan as far north as Samarkand Province); Persia, Afghanistan, Arabia; Sind Punjab (Salt Range) and North-West Frontier (Peshawar).

PARAECHINUS HYPOMELAS HYPOMELAS Brandt, 1836

1836. *Erinaceus hypomelas* Brandt, Bull. Sci. St. Pétersb. *1:* 32. Northern Persia. (See Ognev, 1927, Zool. Anz. *69:* 210–212.)

1875. *Erinaceus macracanthus* Blanford, Ann. Mag. N.H. *16:* 310. Near Kerman (Carmania), 5,000–6,000 ft., Persia.

1918. *Paraechinus amir* Thomas, Ann. Mag. N.H. *1:* 232. Kandahar, Afghanistan.

Range: Persia, Afghanistan, Russian Turkestan.

PARAECHINUS HYPOMELAS BLANFORDI Anderson, 1878

1878. *Erinaceus blanfordi* Anderson, J. Asiat. Soc. Bengal, *47*, 2: 208. Rohri, Sind, North-Western India.

1878. *Erinaceus jerdoni* Anderson, *loc. cit.* 209. Karachi, Sind, India.

PARAECHINUS HYPOMELAS NIGER Blanford, 1878

1878. *Erinaceus niger* Blanford, J. Asiat. Soc. Bengal, *47*, 2: 212. Muscat, Arabia.

PARAECHINUS HYPOMELAS SENICULUS Thomas, 1922

1922. *Paraechinus niger seniculus* Thomas, Ann. Mag. N.H. *9:* 142. Island of Tanb, Persian Gulf.

PARAECHINUS HYPOMELAS SABAEUS Thomas, 1922

1922. *Paraechinus niger sabaeus* Thomas, Ann. Mag. N.H. *9:* 143. El Kubar, about 60 miles north of Aden, 5,200 ft., Arabia.

PARAECHINUS HYPOMELAS EVERSMANNI Ognev, 1927

1927. *Paraechinus hypomelas eversmanni* Ognev, Zool. Anz. *69:* 218. Ust-Urt, east of Caspian Sea, Northern Russian Turkestan.

FAMILY TALPIDAE

Genera: *Desmana*, page 32
Galemys, page 33
Scapanulus, page 35
Scaptonyx, page 34
Talpa, page 35
Uropsilus, page 31
Urotrichus, page 33

On these genera see Cabrera (1925). Another helpful work is Winge, 1923, *Pattedyr Slaegter, 1:* 143–155 (key, 154–155). About a dozen genera are currently recognized in this family in the Old World which Simpson, following Thomas and Cabrera, divides into four subfamilies. It is beginning to be understood that no useful purpose is served by recognizing genera based solely on dental formulae in this family. Thus Schwarz (1948) refers all members of the subfamily Talpinae to one genus, in one species of which are four different dental formulae which have hitherto

been considered as of generic value. Similarly, Osgood (1937) has shown conclusively that in the Uropsilinae the three supposed genera of Thomas are of very little value, being based solely on the presence or absence of vanishing teeth which give three supposedly different dental formulae.[1] For this family we are fortunate in possessing the manuscript which Chaworth-Musters prepared for a list of Palaearctic Mammals.

The subfamilies and genera here admitted may be separated as follows:

1. The upper canine is the dominant front tooth; it is conspicuously larger than the incisors in front of it. Animal modified for underground life. Tail very short. Hand very large, larger than in other Asiatic and European genera, the inner side conspicuously broadened. (Subfamily TALPINAE) *TALPA*

   The upper canine is not the dominant front tooth, but the first upper incisor is generally very strongly so. In one genus (*Scaptonyx*) none of the front teeth are much enlarged. ——2

2. Animal modified for aquatic life; hindfeet very broad and large; tail long, nearly as long as, or longer than, head and body, at least partly specialized for swimming. First upper incisor very large. (Subfamily DESMANINAE) ——3

   Animal not aquatic; tail not specialized for swimming, and hindfeet less broadened. ——4

3. Tail flattened laterally throughout; unicuspid teeth low and thick; ridges on braincase unusually developed; head and body 180–215 mm. (Ognev), tail 170–215 mm. *DESMANA*

   Tail flattened laterally only at end; unicuspid teeth slender; ridges on braincase moderate; head and body *circa* 110–156 mm., tail *circa* 126–156 mm. *GALEMYS*

4. Animal shrew-like; tail long, sometimes as long as head and body, and usually over 80 per cent. of it, poorly haired; hands small, not fossorial. First upper incisor dominant but not very strongly enlarged. Head and body length under 90 mm. (Subfamily UROPSILINAE) *UROPSILUS*

   Animal mole-like; tail well haired, often almost bushy, short, averaging 55 per cent. at most of head and body, but more often less than 40 per cent. of it. Hands large and broad, fossorial; but less broadened, particularly on inner side, than in Talpinae. (Subfamily SCALOPINAE) ——5

[1] Precisely similar conditions occur in the African family Chrysochloridae. As many as nine genera have been admitted, and no two authors agree which are valid and which are of subgeneric value when endeavouring to make revision: nor will they do so until they realize that presence or absence of vanishing teeth are of not much value. Thus in "*Neamblysomus*" three quite different formulae are found in the same series; and *Chrysochloris* as restricted by Roberts, for which a large series has been collected in the West Cape, has the formula varying individually so that three formulae at least can be present. One of us (J. R. E.) has examined the great majority of type specimens in this family, and inclines to the view that there are only three main generic types in this family: *Chrysospalax*, the giant golden-moles with the posterior zygoma root and occiput much enlarged; *Chrysochloris*, containing the majority of the subgenera and species, small animals with posterior zygoma root and occiput normal, and two functional fingers in the hand; and *Eremitalpa*, like *Chrysochloris*, but hand with three functional fingers. Surely in animals so highly modified for digging as these are, the latter character is very much more important than any dental formula?

5. First upper incisor not much enlarged; 42 teeth, 11 upper, 10 lower. (Head and body length 90 mm., and less.) *SCAPTONYX*
   First upper incisor very enlarged; 36 or 38 teeth. ——6

6. Head and body length roughly 100 mm. (98–108 mm.). Nine upper and 9 lower teeth. *SCAPANULUS*
   Head and body length very rarely reaches 100 mm. (four only in eighty-five specimens noted in B.M.). Ten upper, 8 or 9 lower teeth. *UROTRICHUS*

Subfamily Uropsilinae

Genus **UROPSILUS** Milne-Edwards, 1872

1872. *Uropsilus* Milne-Edwards in David, Nouv. Arch. Mus. H.N. Paris, 7; Bull. 92. *Uropsilus soricipes* Milne-Edwards.
1911. *Nasillus* Thomas, Abstr. P.Z.S. 49; P.Z.S. 129. *Nasillus gracilis* Thomas.
1912. *Rhynchonax* Thomas, P.Z.S. 130. *Rhynchonax andersoni* Thomas.

1 species: *Uropsilus soricipes*, page 31

Three genera, based on three dental formulae which are now known not to be constant, are tentatively referred to a single species. (It may be noted that in *Talpa micrura* as recently defined by Schwarz, four different dental formulae occur.) See particularly Osgood, 1937, *Field Mus. Publ. Zool. 20*, 27: 365. G. Allen thought that the three groups should stand as genera until they can be shown to be not generically valid, and argues that the three groups are probably distinct as they have fairly distinct areas of geographical distribution. Against this it might be argued that as they do not occur together they are probably all races of one species. The three are hardly distinguishable from each other externally. Osgood retained two genera, but his diagnosis is not very convincing, and he apparently thought *Rhynchonax andersoni* was a race of *U. soricipes*, while the other two named forms of *Rhynchonax*, *atronates* and *nivatus*, he thought might be races of *Nasillus gracilis*. Until the contrary is proved we prefer to retain one species only, which is considered as on the point of losing some small teeth, so that different individuals may either have them or not.

Uropsilus soricipes Milne-Edwards, 1872 Shrew-Mole

Approximate distribution of species: Szechuan and Yunnan in China, to Northern Burma.

Uropsilus soricipes soricipes Milne-Edwards, 1872

1872. *Uropsilus soricipes* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 92. Rech. H.N. Mamm. 1872, 272. Moupin, Szechuan, China.

Uropsilus soricipes gracilis Thomas, 1911

1911. *Nasillus gracilis* Thomas, Abstr. P.Z.S. No. 100, 49. *1912*, P.Z.S. 130. Mt. Chinfusan, near Nanchwan, 4,000 ft., Szechuan, China. Osgood (1937) retains this form as a species.

Uropsilus soricipes andersoni Thomas, 1911

1911. *Rhynchonax andersoni* Thomas, Abstr. P.Z.S. No. 100, 49. *1912*, P.Z.S. 130. Omisan, Omei Hsien, Southern Szechuan, 9,500 ft., China.

1923. *Rhynchonax andersoni atronates* G. Allen, Amer. Mus. Novit. No. 100, 2. Mucheng Salween drainage, South-Western Yunnan, 7,000 ft., China. Status *fide* Anthony, 1941, Field Mus. Publ. Zool. *27:* 62. But Osgood thought it might be a race of *gracilis*.

Range: to Northern Burma.

Uropsilus soricipes investigator Thomas, 1922

1922. *Nasillus investigator* Thomas, Ann. Mag. N.H. *10:* 393. Kiukiang-Salween divide at 28° N., Yunnan, 11,000 ft., China.

Uropsilus soricipes nivatus G. Allen, 1923

1923. *Rhynchonax andersoni nivatus* G. Allen, Amer. Mus. Novit. No. 100, 2. Ssu-shan (Snow Mountain), Likiang Range, Western Yunnan, 12,000 ft., China. (Osgood thought this might be a race of *gracilis*.)

Subfamily Desmaninae

Genus **DESMANA** Guldenstaedt, 1777

1777. *Desmana* Guldenstaedt, Beschäft Berl. Ges. Naturf. Fr. *3:* 108. *Castor moschatus* Linnaeus.
1799. *Desman* Lacepède, Tabl. Mamm. 7. *Castor moschatus* Linnaeus.
1800. *Mygale* Cuvier, Leç. Anat. Comp. 1, Tabl. 1. *Castor moschatus* Linnaeus.
1815. *Desmanus* Rafinesque, Analyse de la Nature, 59. Renaming of *Mygale*.
1829. *Myogalea* Fischer, Synops. Mamm. 250. Substitute for *Mygale*.
1830. *Caprios* Wagler, Nat. Syst. Amphib. 14. Substitute for *Mygale*.
1836. *Myogale* Brandt, Wiegmann's Arch. Naturgesch. *1:* 176.

1 species: *Desmana moschata*, page 32

Desmana moschata Linnaeus, 1758 — Russian Desman

Approximate distribution of species: "The basins of the Volga, Don and Mius. East to the lower Kama, north to upper Unzha; west to Ruibinsk, the confluence of the Mosha with the Volga, Moscow and Kharkov, and south to the Don (it does not occur on the left-bank tributaries of that river) and Volga delta, and the middle and lower River Ural" (Bobrinskii).

Desmana moschata Linnaeus, 1758

1758. *Castor moschatus* Linnaeus, Syst. Nat. 10th ed. *1:* 59. Russia.
1811. *Mygale moscovitica* Geoffroy, Ann. Mus. H.N. Paris, *17:* 192. Substitute for *moschatus* Linnaeus.

Genus **GALEMYS** Kaup, 1829

1829. *Galemys* Kaup, Skizz. Europ. Thierwelt, *1:* 119. *Mygale pyrenaica* Geoffroy.
1835. *Mygalina* I. Geoffroy in Gervais, Résumé des Leçons de Mamm. 45. *Mygale pyrenaica* Geoffroy.
1846. *Galomys* Agassiz, Nom. Zool. Index Univ. 159. Emendation of *Galemys*.

1 species: *Galemys pyrenaicus*, page 33

Galemys pyrenaicus Geoffroy, 1811 Pyrenean Desman

Approximate distribution of species: Pyrenean region of South-Western France, Spain and Portugal (see Puisségur, 1937, Recherches sur le Desman des Pyrénées, Bull. Soc. H.N. Toulouse, *67:* 163–225, map, 2 pls., 104 figs.).

Galemys pyrenaicus pyrenaicus Geoffroy, 1811

1811. *Mygale pyrenaica* Geoffroy, Ann. Mus. H.N. Paris, *17:* 193. Near Tarbes, Hautes-Pyrénées, France. Range: to North-Eastern Spain.

Galemys pyrenaicus rufulus Graells, 1897

1897. *Myogalea rufula* Graells, Mem. R. Accad. Madrid, *17:* 460. Rio Balsain, above the Venta de los Mosquitos, Sierra de Guadarrama, Segovia, Central Spain.

Subfamily Scalopinae

Three genera in Asia, all apparently closely allied to each other, are admitted in this typically Nearctic subfamily.

Genus **UROTRICHUS** Temminck, 1841

1839. *Urotrichus* Temminck, Tijdschr. Natuur. Gesch. *5:* 286. *Urotrichus talpoides* Temminck, *nom. nud.*
1841. *Urotrichus* Temminck, Het. Instit. K. Ned. Inst. 212. *Urotrichus talpoides* Temminck.
1887. *Dymecodon* True, Proc. U.S. Nat. Mus. *1886:* 97. *Dymecodon pilirostris* True.

2 species: *Urotrichus pilirostris*, page 34
Urotrichus talpoides, page 34

U. pilirostris was named as a distinct genus *Dymecodon*, characterized by having nine lower teeth (two lower incisors), thereby differing from typical *Urotrichus* which has eight lower teeth (one lower incisor). Bearing in mind that within *Uropsilus* and *Talpa* as here understood and as defined in part by Schwarz and by Osgood, different

dental formulae occur in the same species, and also bearing in mind Simpson's statement that animals from similar localities are likely to be allied to each other, this is not a character of even subgeneric value. However, the tail seems about half head and body length in *pilirostris* so far as can be at present ascertained, whereas in *talpoides* it is normally below 40 per cent. of that measurement, and this character combined with the extra lower tooth suggests that here it is possible that we are dealing with two valid species.

Urotrichus talpoides Temminck, 1841 — Japanese Shrew-Mole

Approximate distribution of species: Japan (apparently Hondo southwards).

Urotrichus talpoides talpoides Temminck, 1841

1841. *Urotrichus talpoides* Temminck, Het. Instit. K. Ned. Inst. 215. Nagasaki, Kiushiu, Japan. (See Kuroda, 1938, List. Jap. Mamm. 87.)

1906. *Urotrichus talpoides pilirostris* Thomas, P.Z.S. *1905*, 2: 342. Not of True, 1886.

Urotrichus talpoides adversus Thomas, 1908

1908. *Urotrichus talpoides adversus* Thomas, P.Z.S. 49. Sasuna, North Island, Tsushima Islands, Japan.

Urotrichus talpoides centralis Thomas, 1908

1908. *Urotrichus talpoides centralis* Thomas, P.Z.S. 50. Jinrio, Tokushima Ken, 500 ft., Shikoku Island, Japan.

Urotrichus talpoides hondonis Thomas, 1908

1908. *Urotrichus talpoides hondonis* Thomas, P.Z.S. 51. Nakaomi, near Ohitu, Izo, Hondo, Japan.

1929. *Urotrichus talpoides yokohamanis* Kanda, Zool. Mag. Tokyo, *41:* 147. (*N.V.*) Yokohama, Hondo, Japan.

Urotrichus talpoides minutus Tokuda, 1932

1932. *Urotrichus talpoides minutus* Tokuda, Annot. Zool. Jap. *13:* 580. Dogo Island, Oki Islands, Japan.

Urotrichus pilirostris True, 1886 — True's Shrew-Mole

Approximate distribution of species: Hondo, Japan.

Urotrichus pilirostris True, 1886

1886. *Dymecodon pilirostris* True, Proc. U.S. Nat. Mus. *9:* 97. Enoshima (Yenosima), at mouth of Bay of Yeddo, Hondo, Japan.

Genus **SCAPTONYX** Milne-Edwards, 1872

1872. *Scaptonyx* Milne-Edwards in David, Nouv. Arch. Mus. H.N. Paris, *7:* Bull. 92. *Scaptonyx fusicauda* David.

1 species: *Scaptonyx fusicaudus*, page 35

Scaptonyx fusicaudus Milne-Edwards, 1872 Long-tailed Mole

Approximate distribution of species: Szechuan and Yunnan in China; Northern Burma.

Scaptonyx fusicaudus fusicaudus Milne-Edwards, 1872

1872. *Scaptonyx fusicauda* Milne-Edwards in David, Nouv. Arch. Mus. H.N. Paris, *7:* Bull. 92. Borders of Kukunor and Szechuan, China.

1872. *Scaptonyx fusicaudatus* Milne-Edwards, Rech. H.N. Mamm. 278. Borders of Kukunor and Szechuan, China.

Scaptonyx fusicaudus affinis Thomas, 1912

1912. *Scaptonyx fusicaudatus affinis* Thomas, Ann. Mag. N.H. *9:* 514. Twelve miles south-east of Atunsi, North-Western Yunnan, 13,500 ft., China. Range: Yunnan, Northern Burma.

Genus **SCAPANULUS** Thomas, 1912

1912. *Scapanulus* Thomas, Ann. Mag. N.H. *10:* 396. *Scapanulus oweni* Thomas.

1 species: *Scapanulus oweni*, page 35

Scapanulus oweni Thomas, 1912 Kansu Mole

Approximate distribution of species: China, States of Kansu, Szechuan and Shensi.

For notes on this genus see also G. Allen, 1938, *Mamm. China & Mongolia*, *1:* 81. The Nearctic *Neürotrichus* has a similar dental formula. We have few specimens for either, but our *Scapanulus* has a much larger hand, and thicker, hairier tail than our *Neürotrichus*, and the first upper incisor seems larger in *Scapanulus*.

Scapanulus oweni Thomas, 1912

1912. *Scapanulus oweni* Thomas, Ann. Mag. N.H. *10:* 397. Twenty-three miles south-east of Taochou, Kansu, 9,000 ft., China.

Subfamily T a l p i n a e

For revision, see Schwarz, 1948, Revision of the Old World Moles of the genus *Talpa*, P.Z.S. *118:* 36–48.

Genus **TALPA** Linnaeus, 1758

1758. *Talpa* Linnaeus, Syst. Nat. 10th ed. *1:* 52. *Talpa europaea* Linnaeus.

1848. *Mogera* Pomel, Arch. Sci. Phys. Nat. Genève, *9:* 246. *Talpa wogura* Temminck.

1867. *Scaptochirus* Milne-Edwards, Ann. Sci. Nat. Zool. *7:* 375. *Scaptochirus moschatus* Milne-Edwards.

1875. *Parascaptor* Gill, Bull. U.S. Geol. & Geogr. Surv. Terr. *1*, 2: 110. *Talpa leucura* Blyth.

1898. *Chiroscaptor* Heude, Mém. H.N. Emp. Chin. *4*, 1: 36. *Chiroscaptor sinensis* Heude = *Scaptochirus moschatus* Milne-Edwards.

1940. *Euroscaptor* Miller, J. Mamm. *21:* 443. *Talpa klossi* Thomas.

TALPA *contd.*

1941. *Eoscalops* Stroganov, C.R. Acad. Sci. URSS. *33:* 270. *Talpa longirostris* Milne-Edwards.

1941. *Asioscalops* Stroganov, C.R. Acad. Sci. URSS. *33:* 271. *Talpa altaica* Nikolsky.

1948. *Asioscaptor* Schwarz, P.Z.S. *118:* 36. Error for *Asioscalops* Stroganov.

3 species: *Talpa caeca*, page 38
Talpa europaea, page 37
Talpa micrura, page 39

It is very difficult to decide how many species should be retained in this genus. Miller (1912) recognized four in Europe, *europaea*, *caeca*, *romana* and *occidentalis*, and in the latest revision of the genus (Schwarz, 1948) this classification is followed exactly. Ognev in his work on the Mammals of the U.S.S.R. also retained four species, *europaea*, *caeca*, *altaica* and *caucasica*, but his characters were not very convincing, and Schwarz, while retaining *altaica*, makes *caucasica* a synonym of *europaea*. More recently Bobrinskii and Kuzyakin refer all forms from the U.S.S.R. to a single species *europaea*, with groups of races typified by *europaea*, *caeca* and *altaica*. Chaworth-Musters' manuscript agrees with Bobrinskii's arrangement for the Western and Central Asiatic members of the genus. Against this it must be stated that the range of *T. europaea* overlaps that of *T. caeca* in Switzerland and apparently in the Caucasus. On account of this, the latter is here listed as a valid species. There is an average size difference between the two, *caeca* being the smaller. Schwarz, who seems to oversplit the western section of the genus, does the reverse with the Eastern Asiatic forms. All of these he refers to a single species for which the prior name is *Talpa micrura*. Hitherto these have been distributed among four genera, *Talpa*, *Mogera*, *Parascaptor* and *Scaptochirus*, all of them based on dental formulae which Schwarz shows are not constant. The nosepad is long, naked and grooved on the upper side in *T. micrura* as understood by Schwarz, the penis is said to be specialized (on this account Miller separated those forms which retain the primitive 44 teeth as *Euroscaptor*), and the tail is much shortened; in B.M. material this is usually 20 mm. or less in length, except for the large form *kobeae* in which it averages only 14 per cent. of the head and body. The western species have the tail very rarely as short as 20 mm. *T. altaica* approaches the *micrura* group, apparently, in the structure of the nosepad, and the tail is relatively short (although in Bobrinskii's figures it is rarely under 20 mm.). This author states that the *europaea* moles in the U.S.S.R. are small, but with large teeth and a long tail, while the *altaica* moles are considerably larger, but with small teeth and a short tail, but that the two groups are connected by intermediate forms and, excepting in the Caucasus, all conform to a definite law; as one goes south, and particularly east, the size of the animals increases while their teeth and tail become smaller. He gives figures to support this. So that although Schwarz says that *altaica* is definitely not *europaea*, we suggest that as this form does not occur together with *europaea* it might, following Bobrinskii and Chaworth-Musters, be considered a very distinct representative race. It seems not very much more distinct from *europaea* than some forms, notably *moschatus*, which Schwarz refers as a subspecies to *T. micrura*, are from the latter. If in the future subgeneric division is required for the *micrura* group, then *Mogera* is the prior name.

Talpa europaea group.

Talpa europaea Linnaeus, 1758 Common Mole

Approximate distribution of species: Europe, widely distributed; north to Southern Sweden; south to Spain, Italy, Sicily and Northern Greece; west to Britain; east to Ural Mountains and Caucasus. Occurs in France, Belgium, Holland, Denmark, Finland, Poland, Germany, Switzerland, Transylvania, Yugoslavia, Rumania, Bulgaria. According to Kuzyakin and Bobrinskii, represented in the Siberian Altai region of Lake Baikal, Lena river, near Yakutsk, Northern Yenesei—apparently extending north of the Arctic Circle and to Mongolia.

Talpa europaea europaea Linnaeus, 1758

1758. *Talpa europaea* Linnaeus, Syst. Nat. 10th ed. *1:* 52. Engelholm, Kristianstad, Southern Sweden. (Chaworth-Musters' MSS. See Skanska Reise, 352, misprinted "332" in Linnaeus, *loc. cit.* 52.)
1772. *Talpa caudata* Boddaert, Kortbegrip Nat. *1:* 50. (*N.V.*) Renaming of *europaea*.
1776. *Talpa frisius* Muller, in Linnaeus, Natursyst. Nat. Suppl. 36. East Friesland, Holland.
1777. *Talpa europaea albo-maculata* Erxleben, Syst. Regn. Anim. *1:* 117. East Friesland.
1785. *Talpa vulgaris* Boddaert, Elench. Anim. *1:* 126. Renaming of *europaea*.
1788. *Talpa europaea alba* Gmelin, Linn. Syst. Nat. 13th ed. *1:* 110. Sweden.
1788. *Talpa europaea cinerea* Gmelin, *loc. cit.* Eifel, Germany.
1788. *Talpa europaea variegata* Gmelin, *loc. cit.* Sweden.
1792. *Talpa europaea nigra* Kerr, Anim. Kingd. 200. Renaming of *europaea*.
1797. *Talpa europaea rufa* Borkhausen, Der Zoologe (Compendiose Bibliothek gemeinn. Kenntn. f. alle Stände, *21*) Heft. 5–8: 13. (*N.V.*, *teste* Miller). Southern France.
(?) 1800. *Talpa europaea major* Bechstein in Pennant, Allgem. Uebers Vierf. Thiere, *2:* 725. Siberia, no exact locality.
1836. *Talpa europaea flavescens* Reichenbach, Der Naturfreund, figs. 472–3. Saxony, Germany.
1852. *Talpa europaea albida* Reichenbach, Vollständ. Naturgesch. *4:* 336. Germany.
1852. *Talpa europaea lutea* Reichenbach, *loc. cit.* Germany.
1869. *Talpa europaea maculata* Fitzinger, S.B. Akad. Wiss. Wien. *59*, 1: 401. Renaming of *albo-maculata*.
1869. *Talpa europaea grisea* Fitzinger, *loc. cit.* 403. Synonym of *cinerea* wrongly attributed to Zimmermann, 1780.
1897. *Talpa scalops* Schulze, Helios Berlin, *14:* 91. Renaming of *europaea*.
1908. *Talpa europaea brauneri* Satunin, Mitt. Kaukas. Mus. *4:* 2, 8. Post Cuculi, Belitsk district, Bessarabia.
1908. *Talpa coeca caucasica* Satunin, Mitt. Kaukas. Mus. *4:* 5–9. Stavropol, Caucasus. (Status *fide* Schwarz.)
1925. *Talpa europaea uralensis* Ognev, Bull. Soc. Nat. Moscou, *33*, 1–2: 4. District of Perm, Russia.
1930. *Talpa europaea pančići* Martino, Zap. Russk. Nauch. Inst. Byelgrad, *2:* 60. Kraljevo, Serbia, Yugoslavia.

TALPA EUROPAEA EUROPAEA [*contd.*]

1931. *Talpa romana stankovici* Martino, J. Mamm. *12:* 53. Magerevo Mountains, Perister, Macedonia, 1,000 m., Southern Serbia.

Range: European range of the species, except Sicily; in Italy, south to Tuscany; in Russia, north to the region of the White Sea (absent from Crimea).

TALPA (?) EUROPAEA ALTAICA Nikolsky, 1883

1883. *Talpa altaica* Nikolsky, Trans. Soc. Nat. St. Pétersb. *14:* 165. Valley of the Tourak, Altai Mountains, Siberia.

1905. *Talpa cocca* var. *suschkini* Kastschenko, Trans. Tomsk. Univ. *27:* 75 (of reprint). Sayan Mountains, Central Siberia.

1921. *Talpa altaica saianensis* Bielovusev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* xviii. Kazir-Susko Forest, Sayan Mountains, 2,000 ft., Siberia.

(?) 1922. *Talpa europaea* var. *irkutensis* Dybowski, Arch. Nauk. Biol. Lwow, *1*, 6–8: 4 (*nom. nud.*). Irkutsk, Siberia.

1936. *Talpa altaica salairica* Egorin, Trav. Inst. Sci. Biol. Tomsk, *2:* 154. Salair Mountains, Tomsk Govt., Siberia.

1937. *Talpa altaica tymensis* Egorin, Trav. Inst. Sci. Biol. Tomsk, *4:* 49. Tymsk, Naunak, on River Vasyugan, tributary of River Ob, Siberia.

1937. *Talpa altaica sibirica* Egorin, Trav. Inst. Sci. Biol. Tomsk, *4:* 51. Avseenko, Tyazhin, near Mariinsk, Western Siberia

Range: Asiatic range of the species, above.

Schwarz considers this a distinct species.

TALPA EUROPAEA ROMANA Thomas, 1902

1902. *Talpa romana* Thomas, Ann. Mag. N.H. *10:* 516. Ostia, near Rome, Italy.

1920. *Talpa romana major* Altobello, Fauna Abruzzo e Molise, Mamm. *1:* 32. Abruzzi, Italy. Not of Bechstein, 1800.

1925. *Talpa romana montana* Cabrera, Genera Mamm. 87. *Nom. nov.* for *major* Altobello, preoccupied.

Range: Italy and Sicily.

Schwarz considers this a distinct species, chiefly characterized by large teeth and dental details. It is not known to occur with *europaea*, and Chaworth-Musters treated it as *europaea*.

TALPA EUROPAEA OGNEVI Stroganov, 1944

1944. *Talpa romana ognevi* Stroganov, C.R. Acad. Sci. U.R.S.S. *44*, 3: 121. Bakuriana, Georgia, Transcaucasia.

The status of the next is not sure. Neither this nor apparently the last were allocated by Schwarz.

1945. *Talpa europaea transcaucasica* Dahl, Zool. Pap. Biol. Inst. Erevan, 3, 48. (*N.V.*). Voskresenkowa, Kirovakan, Armenia.

Talpa caeca Savi, 1822 — Mediterranean Mole

Approximate distribution of species: Portugal, Spain, Switzerland, Italy, Yugoslavia, Greece, Asia Minor, Caucasus. Treated as a subspecies of *europaea* by Bobrinskii and Kuzyakin, and in synonymy of *europaea* by Chaworth-Musters, but it occurs with *europaea* in several places in Switzerland, and in Caucasia. Averages smaller in size than *europaea*.

Talpa caeca caeca Savi, 1822

1822. *Talpa caeca* Savi, Nuovo Giorn. dè Letterati, Pisa, *1:* 265. Near Pisa, Italy.
1884. *Scaptochirus davidianus* Milne-Edwards, C.R. Acad. Sci. Paris, *99:* 1143. Said to have come from borders of Syria and Asia Minor. Not of Swinhoe, 1870.
1906. *Talpa coeca levantis* Thomas, Ann. Mag. N.H. *17:* 416. Scalita, south of Trebizond, Asia Minor.
1925. *Talpa hercegovinensis* Bolkay, Nov. Mus. Sarajevo, No. 1: 1. Stolac, Herzegovina, Yugoslavia.
1926. *Talpa coeca orientalis* Ognev, Uchen Zap. Sev. Kavkaz. Inst. *1:* 33, 55. Chosta, Black Sea Govt., Southern Russia.
1932. *Talpa olympica* Chaworth-Musters, Ann. Mag. N.H. *9:* 166. Eastern slope Mount Olympus, Thessaly, 800 m., Greece.

Range: Switzerland and Italy to Asia Minor and Caucasus.

Talpa caeca occidentalis Cabrera, 1907

1907. *Talpa caeca occidentalis* Cabrera, Ann. Mag. N.H. *20:* 212. La Granja, Segovia, Spain. Range: Spain and Portugal. Schwarz gives this form specific rank.

Talpa micrura group.

The classification of Schwarz, 1948, is followed.

Talpa micrura Hodgson, 1841 Eastern Mole

Approximate distribution of species, as understood by Schwarz: from Ussuri region of South-Eastern Siberia, Manchuria, Korea, Japan, Formosa, Eastern Mongolia (*fide* Schwarz), the greater part or all of the major states of China (Kansu apparently excepted); to Indo-China, Siam, Malay States, and Burma, Assam, westwards to Sikkim and Nepal.

Talpa micrura micrura Hodgson, 1841

1841. *Talpa micrurus* Hodgson, Calcutta J.N.H. *2:* 221. Nepal, Central and Northern Hills.
1843. *Talpa cryptura* Blyth, J. Asiat. Soc. Bengal, *12:* 177. Sylhet, Assam.
1858. *Talpa macrura* Hodgson, J. Asiat. Soc. Bengal, *27:* 176. Near Darjeeling, 7,000 ft., India. (Status *fide* Schwarz.)

Range: Nepal, Sikkim, Assam.

Talpa micrura wogura Temminck, 1842

1842. *Talpa wogura* Temminck, in Siebold's Fauna Japonica, Mamm. *1:* 19. Nagasaki, Kiushiu, Japan.
1845. *Talpa moogura* Temminck, *loc. cit. 4:* tab. 4, figs. 1–5. Misspelling of *wogura*.
1880. *Talpa mizura* Günther, P.Z.S. 441. Neighbourhood of Yokohama, Japan.
1936. *Mogera wogura minor* Kuroda, Botany & Zoology, Tokyo, *4*, 1: 74. Shiobora, Pref. Tochigi, Central Hondo, Japan.
1936. *Mogera wogura gracilis* Kishida, Nikkô No. Shokubutsu to Dôbutsu, 261. (*N.V.*, ? *nom. nud.*). Near Shobugahama, Nikko, Japan.

Range: Japan, including Hondo, Shikoku, Oki Islands.

TALPA MICRURA LEUCURA Blyth, 1850

1850. *Talpa leucura* Blyth, J. Asiat. Soc. Bengal, *19:* 215, pl. 4, fig. 1. Cherrapunji, in Khasi Hills, Assam.

(?) 1929. *Talpa klossi* Thomas, Ann. Mag. N.H. *3:* 206. Hue Nya Pla, 10 miles north-west of Raheng, 2,500 ft., Siam.

(?) 1940. *Talpa parvidens* Miller, J. Mamm. *21:* 203. In forest at agricultural station of Blao, near the upper Donai River, Annam, Indo-China. (See Schwarz, 1948: 46.)

Range: Assam, Burma, Siam, Laos, Cochin-China, Annam, ? Yunnan, and Malay States.

(Some lines have accidentally been omitted from Schwarz's paper in dealing with this race.)

TALPA MICRURA INSULARIS Swinhoe, 1862

1862. *Talpa insularis* Swinhoe, P.Z.S. 356. Formosa.

TALPA MICRURA MOSCHATA Milne-Edwards, 1867

1867. *Scaptochirus moschatus* Milne-Edwards, Ann. Sci. Nat. Zool. *7:* 375. Swanhwafu, 100 miles north-west of Pekin, Chihli, China.

1870. *Scaptochirus davidianus* Swinhoe, P.Z.S. 620. Accidental renaming of *moschatus.*

1881. *Talpa leptura* Thomas, Ann. Mag. N.H. *7:* 470. Neighbourhood of Pekin, Chihli, China.

1898. *Chiroscaptor sinensis* Heude, Mém. H.N. Emp. Chin. *4:* 36. South-Eastern Chihli, China.

1898. *Scaptochirus moschiferus* Heude, *loc. cit.* 40. Accidental renaming of *moschatus.*

1910. *Scaptochirus gilliesi* Thomas, Ann. Mag. N.H. *5:* 350. Ho-tsin, South-Western Shansi, China.

1941. *Parascaptor grandidens* Stroganov, C.R. Acad. Sci. U.R.S.S. *33:* 271. Tuntzia-Intza (Tunchia Yingtze), east of Dolon Nor, Southern Khingan Mountains, Jehol, North-Eastern China.

Range: Chihli, Jehol, Shansi, Shensi, Shantung, in China.

TALPA MICRURA LONGIROSTRIS Milne-Edwards, 1870

1870. *Talpa longirostris* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. Moupin, Szechuan, China.

1907. *Mogera latouchei* Thomas, P.Z.S. 463. Kuatun, Fukien, 3,500 ft., South-Eastern China.

1940. *Euroscaptor grandis* Miller, J. Mamm. *21:* 444. Mt. Omei, 5,000 ft., Szechuan, China.

TALPA MICRURA ROBUSTA Nehring, 1891

1891. *Mogera robusta* Nehring, S.B. Ges. Naturf. Fr. Berlin, No. 6: 95. Vladivostock, Eastern Siberia. Range: Ussuri region, Manchuria.

TALPA MICRURA KOBEAE Thomas, 1905

1905. *Mogera wogura kobeae* Thomas, Ann. Mag. N.H. *15:* 487. Kobe, Hondo, Japan.

TALPA MICRURA KANAI Thomas, 1906

1906. *Mogera wogura kanai* Thomas, P.Z.S. *1905*, 2: 361. Miyanoura, Yakushima, Japan.

1938. *Mogera wogura kiusiuana* "Kishida", Kuroda, List Jap. Mamm. Tokyo, 89, *nom. nud.*

Range includes Tsushima, Kiushiu and the Goto group, Japan.

TALPA MICRURA COREANA Thomas, 1907

1907. *Mogera wogura coreana* Thomas, P.Z.S. 463. Kim-hoa, 65 miles north-east of Scoul, 300 ft., Korea.

TALPA MICRURA HAINANA Thomas, 1910

1910. *Mogera hainana* Thomas, Ann. Mag. N.H. *5:* 535. Mt. Wuchi, Island of Hainan, China. (Apparently not dealt with by Schwarz.)

FAMILY SORICIDAE

Genera: *Anourosorex*, page 87
Blarinella, page 55
Chimmarogale, page 87
Crocidura, page 70
Diplomesodon, page 86
Feroculus, page 86
Nectogale, page 88
Neomys, page 61
Solisorex, page 86
Sorex, page 43
Soriculus, page 56
Suncus, page 64

According to Simpson (1945), so far as the present region is concerned, the above genera fall into two subfamilies: the Soricinae, with *Sorex*, *Blarinella*, *Soriculus* and *Neomys*; and the Crocidurinae with the remainder.

This division into subfamilies, which is adopted by many authors, seems to be based chiefly on the Soricinae having the teeth pigmented at the tips, and the Crocidurinae having the teeth entirely white. Other authors, e.g. Allen, Miller and Bobrinskii, do not recognize these subfamilies and we concur with them, especially in view of the variability in the extent, or even the entire absence, of the pigmentation of the teeth in the Soricinae.

The Soricidae is perhaps the most difficult of all mammalian families to deal with, so far as the species are concerned. Chaworth-Musters was attempting the task just before his untimely death, but the only manuscript he left deals with some of the Palaearctic species of the genus *Sorex*.

The twelve genera represented in London may be distinguished as follows:

1. Teeth with the cusps pigmented, red or brown; pigmentation can become very weak but is normally traceable. (Subfamily SORICINAE of Simpson)[1] ——2
   Teeth all white. (Subfamily CROCIDURINAE of Simpson) ——5
2. Slightly modified for aquatic life; the hindfeet large and fringed; the tail long, its underside keeled or hairy. First lower incisor more or less simple, scarcely lobed. *NEOMYS*
   No aquatic modification. ——3
3. First lower incisor simpler, with only one prominent lobe on its cutting edge. *SORICULUS*
   First lower incisor more complex, with more than one lobe on its cutting edge, usually three or four traceable. ——4
4. The last two upper unicuspid teeth excessively minute, hardly traceable. *BLARINELLA*
   The last two upper unicuspids quite well marked. *SOREX*
5. Externally modified for underground life; tail scarcely apparent externally, shorter than hindfoot. Ears much reduced. Seven upper teeth; M 3 vestigial. *ANOUROSOREX*
   Externally not much modified for burrowing; tail clearly longer than hindfoot. Except *Diplomesodon*, more than 7 upper teeth. ——6
6. Considerably modified for aquatic life; tail long, hairy, more or less fringed below. Ear small or absent. ——7
   Not modified for aquatic life. ——8
7. Much more specialized for aquatic life; toes fully webbed; no external ear traceable; tail with fringes of hair each side and above and below. Braincase very wide. *NECTOGALE*
   Much less specialized for aquatic life; toes not webbed; tail hairy, only the underside slightly fringed; with external ear. *CHIMMAROGALE*
8. Colour piebald, quite distinct from all other Soricidae examined (below, sides, cheeks and a patch in the middle of the back, white; otherwise the back grey, but much white showing on the sides); tail hairy, tufted, and white. Soles slightly hairy. Seven upper teeth; M 3 not vestigial. *DIPLOMESODON*
   Colour not as just described. More than 7 upper teeth. ——9
9. Foreclaws strongly enlarged. ——10
   Foreclaws not enlarged. ——11
10. First lower incisor more complex, with several lobes on its cutting edge (as in *Sorex*); 9 upper teeth (30 teeth in all); clear elongated bristles on the tail (such as are characteristic of most of the species of *Crocidura* and *Suncus*). *FEROCULUS*
    First lower incisor simple; 8 upper teeth (28 teeth in all); no elongated bristles on the tail. *SOLISOREX*

[1] Pigmentation of teeth often weak in *Soriculus* and almost untraceable in the two named Formosan forms of that genus.

11. 30 teeth (4 upper unicuspids).	*SUNCUS*
28 teeth (3 upper unicuspids).	*CROCIDURA*

Genus **SOREX** Linnaeus, 1758

1758. *Sorex* Linnaeus, Syst. Nat. 10th ed. *1:* 53. *Sorex araneus* Linnaeus.
1829. *Oxyrhin* Kaup, Entw. Gesch. u. Nat. Syst. Europ. Thierwelt, *1:* 120. *Sorex tetragonurus* Hermann (see Miller, 1912, 29).
1835. *Amphisorex* Duvernoy, Mem. Soc. Mus. H.N. Strasbourg, *2:* 23. (*Sorex hermanni* Duvernoy = *Neomys fodiens* skull, plus *Sorex araneus tetragonurus* skin.)
1838. *Corsira* Gray, P.Z.S. 123. *Sorex vulgaris* = *Sorex araneus* Linnaeus.
1842. *Otisorex* De Kay, Zool. of New York, *1:* Mamm. 22. *Sorex platyrhinus* = *Sorex personatus* Geoffroy, from North America.
1890. *Homalurus* Schulze, Schriften Nat. Vereins Harzes in Wernigerode, *5:* 28. *Sorex alpinus* Schinz.
1927. *Soricidus* Altobello, Rev. Franc. Mamm. *1:* 6. *Soricidus monsvairani* Altobello = *Sorex araneus tetragonurus* Hermann. (See Gulino, 1939, Boll. Mus. Zool. Anat. Comp. Torino, *47:* 136.)

Apparently 9 species in the Palaearctic region:

Sorex alpinus, page 54
Sorex araneus, page 50
Sorex buchariensis, page 54
Sorex caecutiens, page 48
Sorex cylindricauda, page 55
Sorex daphaenodon, page 53
Sorex hawkeri, page 46
Sorex minutus, page 47
Sorex pacificus, page 54

This genus is exceedingly difficult to classify, and at the present day there are nearly a hundred named forms in the Palaearctic. The greatest number of species occur in the U.S.S.R. Ognev, 1928, *Mamm. U.S.S.R.*, recognized nineteen in that country, but more recently Bobrinskii and Kuzyakin (1944) give a more compressed classification of Russian *Sorex* in which only half a dozen species are retained. These authors consider that the large number of named forms is due to a lack of knowledge of individual, seasonal and age variations, and their classification incorporates a tentative assessment of these. Chaworth-Musters did not complete his manuscript for the classification of *Sorex*, but the first fact that emerges from it is that the species now widely known as *Sorex macropygmaeus* Miller, 1901, must be called *Sorex caecutiens* Laxmann, 1788 (*Nova Acta Acad. Sci. Petrop. 3:* 285). Among forms which Bobrinskiĭ and Kuzyakin would reduce to subspecific rank or less, Chaworth-Musters was going to retain as species *S. daphaenodon*, *S. raddei*, *S. shinto* and *S. tundrensis* (the latter typically from North America, with various Asiatic races).

The classification of Kuzyakin and Bobrinskii for the U.S.S.R. was as follows:

1. Condylobasal length of skull not exceeding 14.2 mm. Length of upper toothrow under 5.8 mm. Width of skull not more than 7 mm. Tail short, not more than 31 mm. Hindfoot (without claws) generally not over 8.7 mm. *Sorex tscherskii* Ognev, 1913, here considered referable to *Sorex hawkeri* Thomas, 1906.

   Condylobasal length of skull not less than 14.8 mm. Length of upper toothrow over 6 mm. Width of skull over 7 mm. Length of tail not less than 33 mm. Hindfoot over 9 mm. ——2

2. Width of skull not more than 8 mm. Total length of skull in large majority of cases under 16.1 mm., condylobasal length not more than 17.3 mm. (usually under 16.1 mm.). Second upper intermediate tooth markedly smaller than the third or (less frequently) the same size. Hindfoot usually less than 11 mm. *Sorex minutus*

   Width of skull not less than 8.2 mm. Total length of skull over 16.3 mm. Condylobasal length not less than 16.5 mm. Second upper intermediate tooth markedly larger than third or conversely smaller than it. Hindfoot over 10.5 mm. ——3

3. Second upper intermediate tooth considerably smaller than third. Total length of skull 17.5 mm. Length of upper toothrow 7.6 mm. *Sorex buchariensis*

   Known from one specimen found in the North-Western Pamirs. In size and configuration of skull it is like *S. macropygmaeus* = *caecutiens*) but in structure of the teeth it differs from all shrews in the Palaearctic.)

   Second upper intermediate tooth markedly larger than third. ——4

4. Head and body not more than 84 mm. Hindfoot less than 16 mm. Condylobasal not more than 21 mm. Upper toothrow length under 9.5 mm. Distance between anteorbital foramina not more than 3.5 mm. Fourth intermediate tooth of upper jaw the same size as, or markedly smaller than, third intermediate tooth. ——5

   Head and body 87 mm. Hindfoot 17 mm. Condylobasal length of skull 23.3 mm. Upper toothrow 10 mm. Distance between anteorbital foramina 4.3 mm. Fourth upper intermediate tooth larger than third. *Sorex pacificus*

   (Described from Oregon, U.S.A. To this species Bobrinskii and Kuzyakin refer the Ussuri form *mirabilis:* "Comparing *S. mirabilis* with the excellent photographs of skuils, measurements and descriptions of *S. pacificus* given in H. Jackson's monograph of the American shrews, 1928, we have been unable to find a single feature by which the Ussuri shrews may with certainty be distinguished from the form *S. p. pacificus.*")

5. Condylobasal length of skull in large majority of cases under 18 mm. Length of upper toothrow not more than 8 mm. Anteorbital foramina close together, distance between them not more than 2.8 mm.

   Sorex macropygmaeus Miller, 1901 = *Sorex caecutiens* Laxmann, 1788

   Condylobasal length of skull over 18 mm. Length of upper toothrow in large majority of cases not less than 8 mm. (usually considerably more). Distance between anteorbital foramina in most cases over 2.8 mm. *Sorex araneus*

According to notes in Bobrinskii and Kuzyakin, there is a wide individual variation to be found in forms which have been regarded as distinct species but which they refer to *S. araneus*. They state, for instance, that the hindfoot length in the Caucasian form (*satunini*) is 11.6–12 mm., whereas in *S. a. peucinius* the hindfoot without claws reaches 15 mm. The body length even in one form (*tomensis*) varies between 53 and 84 mm. The colour pattern varies from almost complete uniformity (in such forms as *isodon, raddei, unguiculatus, ruthenus*) through the common two-coloured type to the markedly three-coloured type in which the light colouring of the flanks reaches the back. The three forms are connected by a great number of transitional stages, and not isolated geographically. Again, flat-skulled individuals (such as *platycranius, thomasi, turuchanensis, iochanseni*) are distributed in the same places as specimens with a normal braincase. The relative sizes of the small intermediate teeth are also said to vary individually in this species. Bobrinskii and Kuzyakin state that in *S. caecutiens koreni* alone three different types of colouring have been noted, and that coloration is useless for diagnostic purposes. These authors incline to ignore all named Russian and Siberian subspecies in the two widely ranging allied species, *S. arancus* and *S. caecutiens*.

Chaworth-Musters told us that in his opinion Bobrinskii had "lumped" too far in the *Sorex* of the U.S.S.R., particularly as regards *S. daphaenodon*, which was described as having an unusually hairy tail and heavily pigmented teeth, and which he considered a very distinct species, and in deference to his opinion that species is here retained, although externally it is not separable from *S. araneus* as here understood.

Miller (1912) recognized three species of the genus in Western Europe, as follows:

1. Anterior lower incisor with low, sometimes ill-defined lobes on cutting edge; first lower unicuspid two-pointed; lachrymal foramen over point of contact between M 1 and M 2. Tail about as long as head and body. *Sorex alpinus*
   (This species is confined to Central Europe, and does not occur in Russia.)
   Anterior lower incisor with high, distinct lobes on cutting edge; first lower unicuspid single-pointed; lachrymal foramen in front of point of contact between M 1 and M 2. Tail shorter than head and body. ——2
2. First, second and third unicuspids subequal; condylobasal length of skull 14.8–16.6 mm. Head and body about 50–60 mm. *Sorex minutus*
   First and second upper unicuspid much larger than third; condylobasal length of skull 17.4–20 mm. Head and body usually about 65–80 mm. *Sorex araneus*

It appears to us from Miller's cranial measurements that the great majority of specimens of the last-named have the condylobasal length very seldom under 18 mm. (cf. Bobrinskii's characters for the species), except the Spanish race *granarius*, which surely represents *S. caecutiens*? Few, if any, of the species outside Europe, except the striped *S. cylindricauda* have the tail as long as *S. alpinus* in B.M. material.

G. Allen, 1938, *Mamm. China & Mongolia*, retained half a dozen species from this region, as follows:

1. Back uniform shade of brown without black median stripe. ——2
   Back with blackish median stripe. *Sorex cylindricauda*
   (Which has from Allen's measurements the greatest length of skull, 16.6–18.5 mm., and is a tropical species.)

2. Larger, hindfoot with claws 13–14 mm. ——3
   Smaller, hindfoot with claws 12 mm. or less. ——5
3. Lower surfaces whitish-tipped. ——4
   Lower surfaces distinctly brownish. *Sorex sinalis*
4. Tail about 40 mm. *Sorex araneus*
   Tail about 50 mm. *Sorex excelsus*
5. Skull length about 18 mm. *Sorex buxtoni* Allen, 1903 = *S. macropygmaeus* Miller, 1901, *fide* Kuzyakin and Bobrinskii = *Sorex caecutiens* Laxmann, 1788.
   Skull length about 15 mm. *Sorex minutus*

Chaworth-Musters was going to list *excelsus* and *sinalis* as distinct species; but if one follows the arrangement of Bobrinskii and Kuzyakin, certainly *sinalis* and probably *excelsus* might be regarded as outlying forms of *S. araneus*.

In India this genus almost fails to occur. Only *S. cylindricauda* comes into Northern Burma, and Miller described a form (*planiceps*) from Kashmir which in all probability represents *S. minutus*. In South-Western Asia there are one or two very early (perhaps unidentifiable) names from Persia; Bodenheimer listed both *S. araneus* and *S. minutus* from Palestine; and Thomas named a form from Asia Minor which Bobrinskii and Kuzyakin refer to *S. araneus*.

The listing of this genus must of necessity be regarded as provisional.

Sorex hawkeri Thomas, 1906

Approximate distribution of species: Russia, part; Siberia, from approximately region of Lake Baikal and the Nizhnaya Tunguska River, eastwards to Kamtchatka, Sakhalin, Ussuri and Nijni Kolymsk; Northern Mongolia (Bobrinskii ; Japan.

SOREX HAWKERI HAWKERI Thomas, 1906

1906. *Sorex hawkeri* Thomas, P.Z.S. *1905*, 2: 339. Inukawa, Yedo, Hondo, Japan.

SOREX HAWKERI TSCHERSKII Ognev, 1913

1913. *Sorex tscherskii* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *18:* 412. Odarka, Lake Chauka, Ussuri region, Eastern Siberia.

Kuzyakin and Bobrinskii state that owing to lack of material it is not possible to give descriptions of the geographical variation. The folowing are named from the U.S.S.R. which are referable to this species.

1915. *Sorex burneyi* Thomas, Ann. Mag. N.H. *15:* 199. Listvineechnoya, near Irkutsk, Lake Baikal, 1,400 ft., Siberia.

1921. *Sorex tscherskii neglectus* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 324. Tesovo forest, Mozhaysk district, Russia.

1921. *Sorex ussuriensis* Ognev, *loc. cit.* 326. Valley of River Bikin, Ussuri region, Eastern Siberia. "Given adequate material, it would be good to determine whether or not the features of '*Sorex ussuriensis*' fall outside the limits of individual variation" (Bobrinskii and Kuzyakin).

1933. *Sorex ussuriensis czekanovskii* Naumoff, Abstr. Zool Inst. Moscow Univ. *1:* 72. Tura, Lower Tunguska River, Central Siberia.

Sorex minutus Linnaeus, 1766 Pygmy Shrew

Approximate distribution of species: Britain and Ireland, Norway and Sweden, France, Germany, Holland, Denmark, Hungary, to Transylvania, Switzerland, Italy, Greece, Poland; forest and forest-steppe zones of Russia, Siberia and the Far East as far as the Shantar Islands and Sakhalin, and including the Caucasus; Szechuan and Tsaidam; North Kurile Islands; apparently Kashmir; Palestine (*fide* Bodenheimer).

Miller, 1912, *Cat. Mamm. W. Europe*, recognized two races in Western Europe:

Sorex minutus minutus Linnaeus, 1766

1766. *Sorex minutus* Linnaeus, Syst. Nat. 12th ed. *1:* 73. Barnaul, Western Siberia (based on Laxmann's MS. of *Sibir. Briefe*).
1769. *Sorex pygmaeus* Laxmann, Sibir. Briefe, 72. Barnaul, Siberia.
1780. *Sorex minutissimus* Zimmermann, Geogr. Gesch. *2:* 385. Yenesei River, Siberia.
1788. *Sorex exilis* Gmelin, in Linn. Syst. Nat. 13th ed. *1:* 115. Yenesei River, Siberia.
1806. *Sorex canaliculatus* Ljungh, K. Svenska Vetensk. Akad. Handl. *27:* 263. Lommaryd Vigorage, Northern Vedbo district, Jörnköping, Sweden.
1811. *Sorex minimus* Geoffroy, Ann. Mus. H.N. Paris, *17:* 186. Selo Kiiskoe, between Tomsk and Atchinsk, Siberia.
1832. *Sorex pumilio* Wagler, Isis, *25:* 54. Bavaria, Germany.
1838. *Sorex rusticus* Jenyns, Ann. N.H. *1:* 423. Near Cambridge, England.
1838. *Sorex rusticus* var *S(orex) hibernicus* Jenyns, *loc. cit.* Dublin, Ireland.
1844. *Sorex pumilus* Nilsson, K. Svenska Vetensk. Akad. Handl. *1:* 33. North-Eastern Skaane, Sweden.
1928. *Sorex minutus minutus* natio *melanderi* Ognev, Mamm. E. Europe & N. Asia, *1:* 245. Smolensk Govt., Russia.

Range: Siberia, Russia, European range of species except Southern Italy and Greece.

Sorex minutus lucanius Miller, 1909

1909. *Sorex minutus lucanius* Miller, Ann. Mag. N.H. *3:* 417. Monte Sirino, Lagonegro, Italy.

Since Miller, the following forms have been named from Western Europe:

1932. *Sorex minutus gymnurus* Chaworth-Musters, Ann. Mag. N.H. *9:* 167. Eastern slope Mt. Olympus, Thessaly, 800 m., Greece.
1940. *Sorex minutus insulaebellae* Heim de Balsac, C.R. Acad. Sci. Paris, *211*, 11: 213. Belle Isle, Western France.

Kuzyakin & Bobrinskii, 1944, *Mamm. U.S.S.R.*, seem to regard the next two named forms as valid.

Sorex minutus gmelini Pallas, 1811

1811. *Sorex gmelini* Pallas, Zoogr. Ross. As. *1:* 134, pl. 10, fig. 3. Crimea (Ognev). (This name is used by both Bobrinskii and Ognev, but Chaworth-Musters in his synonymy of the species stated: "1928. *Sorex minutus gmelini* Ognev, Mamm. E. Europe, N. Asia, *1:* 251. Crimea, not *Sorex gmelini* Pallas, 1811.")

SOREX MINUTUS GRACILLIMUS Thomas, 1907

1907. *Sorex minutus gracillimus* Thomas, P.Z.S. 408. Dariné, 25 miles north-west of Korsakoff, Sakhalin Island. Also recorded Hokkaido and Korea.

Other named forms from the U.S.S.R., apparently not regarded as valid by Kuzyakin and Bobrinskii, are:

1921. *Sorex minutus volnuchini* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 322. Kisha River, Kouban region, North-Western Caucasus.

1923. *Sorex minutus* (morpha) *kastchenkoi* Johansen, Trans. Tomsk Univ. *72:* 66. Novo-kusk, Chulim River, Tomsk district, Siberia.

Chinese and Indian forms apparently representing this species:

SOREX MINUTUS THIBETANUS Kastschenko, 1905

1905. *Sorex minutus thibetanus* Kastschenko, Trans. Univ. Tomsk, *27:* 93 (of reprint). Tsaidam, Chinese Central Asia. Also recorded from Szechuan, China.

SOREX (?) MINUTUS PLANICEPS Miller, 1911

1911. *Sorex planiceps* Miller, Proc. Biol. Soc. Washington, *24:* 242. Dachin, Kishtwar, 9,000 ft., Kashmir.

SOREX (?) MINUTUS LEUCOGASTER Kuroda, 1933

1933. *Sorex leucogaster* Kuroda, Bull. Biogeogr. Soc. Jap. *3*, 3: 155. Nasauki, Amamushiru, 200 ft., North Kurile Islands.

? 1930. *Sorex yamashinai* Kishida, Z. Mag. Tokyo, XLII, 373, *nom. nud.*

SOREX (?) MINUTUS HYOJIRONIS Kuroda, 1939

1939. *Sorex araneus hyojironis* Kuroda, Bull. Biogeogr. Soc. Tokyo, *9:* 40. Jalamute, east of Hailar, Northern Manchuria. The measurements in the description suggest a very short-tailed form of *minutus*.

Sorex caecutiens Laxmann, 1788 Laxmann's Shrew

Approximate distribution of species: apparently Spain and Sweden; from Baltic Republics and Karelia, Finland, east through the U.S.S.R. to the Chukotski Peninsula, Kamtchatka and Sakhalin, north to the Arctic coasts; the southern limit of the range runs from Central Ukraine to Gorki Province, thence by the upper River Ural and the Altai through Mongolia to Korea, Kansu and Japan.

SOREX CAECUTIENS CAECUTIENS Laxmann, 1788

1788. *Sorex caecutiens* Laxmann, Nov. Acta Acad. Sci. Petrop. *1785*, 3: 285. By Lake Baikal [= neighbourhood of Irkutsk, Siberia. Hitherto known as *S. macropygmaeus*, but according to Chaworth-Musters' MS. this much earlier name is valid.

In the U.S.S.R., Bobrinskii and Kuzyakin do not recognize subspecies of *S. macropygmaeus* = *caecutiens*, but they refer *S. buxtoni*, *S. annexus*, *S. baikalensis*, *S. amasari*, *S. shinto* and *S. ultimus*, all of which have been considered distinct species, to the present species.

Chaworth-Musters in his MS. retained *shinto* as a distinct species, and referred the forms *ultimus*, *petschorae* and *middendorffi* as races to *Sorex tundrensis* Merriam, 1900, *Proc. Washington Acad. Sci. 2:* 16, St. Michael's, Alaska.

Russian and Siberian forms in order of naming are:

1901. *Sorex macropygmaeus* Miller, Proc. Biol. Soc. Washington, *14:* 158. Petropaulski, Kamtchatka. (Synonym 1933. *Sorex macropygmaeus macropygmaeus* natio *tungussensis* Naumoff, Abstr. Zool. Inst. Moscow Univ. *1:* 72. Lower Tunguska River, Turukhansk region, North-Western Siberia.)

1903. *Sorex buxtoni* J. Allen, Bull. Amer. Mus. N.H. *19:* 181. Gichiga, west coast Okhotsk Sea, Siberia. (Synonym, according to G. Allen, *Sorex centralis* Thomas, 1911, Ann. Mag. N.H. *8:* 758. Sayan Mountains, 100 miles west of Lake Baikal, 4,000 ft., Siberia.) Ranges to Mongolia.

1913. *Sorex baikalensis* Ognev, Fauna Mosquensis, *1:* 106. Zarentu Mountains, Transbaikalia.

1914. *Sorex araneus ultimus* G. Allen, Proc. New England Zool. Club, *5:* 51. Nijni Kolymsk, near mouth of Kolyma River, North-Eastern Siberia.

1914. *Sorex macropygmaeus koreni* G. Allen, *loc. cit.* 56. Nijni Kolymsk, near mouth of Kolyma River, North-Eastern Siberia.

1921. *Sorex macropygmaeus pleskei* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 311. Charlamova Gora, Gdovsky district, Petrograd Govt., Russia.

1921. *Sorex macropygmaeus rozanovi* Ognev, *loc. cit.* 313. Listvenichnoje, west coast of Lake Baikal, Siberia.

1921. *Sorex macropygmaeus altaicus* Ognev, *loc. cit.* 314. Ongudaj, Bijsk district, Tomsk Govt., Siberia. (Synonym, 1933, *Sorex macropygmaeus altaicus tasicus* Ognev, Abstr. Zool. Inst. Moscow Univ. *1:* 62. Mouth of River Motliki, tributary of River Taza, Turukhansk district, Siberia.)

1921. *Sorex amasari* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 316. Valley of River Amazar, frontier between regions of Amur and Zabaikalje, Siberia.

1921. *Sorex ultimus petschorae* Ognev, *loc. cit.* 317. Pvim-va, Petchora region, Northern Russia.

1930. *Sorex jenissejensis* Dukelski Zool. Anz. *88:* 77. Wostotschennje village, 40 versts south-east of Minussinsk, Siberia.

1933. *Sorex ultimus midendorfii* Ognev, Abstr. Zool. Inst. Moscow Univ. *1:* 59. Sidorovsk, River Taza, Turukhansk district, North-Western Siberia. (Synonym, 1933, *Sorex ultimus middendorfii* natio *irkutensis* Ognev, *loc. cit.* 60. Near Podunsk, on River Angara, Siberia.)

1936. *Sorex tundrensis europaeus* Stroganov, Zool. J. Moscow, *15:* 130. Lake Chun, Imandra district, Kola Peninsula, North-Western Russia.

Chinese and Japanese forms referred to *macropygmaeus* = *caecutiens* by Kuzyakin and Bobrinskii, or to *buxtoni* = *caecutiens* by G. Allen.

1905. *Sorex shinto* Thomas, Abstr. P.Z.S. No. 23, 19. 1906, P.Z.S. *1905*, 2: 338. Makado, Northern Hondo, Japan.

1907. *Sorex shinto saevus* Thomas, P.Z.S. 408. Fifteen miles north-west of Korsakoff, Sakhalin Island. (Synonym, 1934, *Sorex shinto savenus* Tokuda, Zool. Mag. Tokyo, *46:* 578. ? misspelling of *saevus*.) Occurs Hokkaido and Kurile Is.

1907. *Sorex annexus* Thomas, P.Z.S. *1906:* 859. Mingyong, 110 miles south-east of Seoul, 1,300 ft., Korea.

SOREX CAECUTIENS CAECUTIENS [*contd.*]

1912. *Sorex cansulus* Thomas, Ann. Mag. N.H. *10:* 398. Forty-six miles south-east of Taochou, Kansu, China.

Miller (1912) treated the following form as a race of *S. araneus*, but it seems to us to represent the present species.

SOREX CAECUTIENS GRANARIUS Miller, 1910

1910. *Sorex araneus granarius* Miller, Ann. Mag. N.H. *6:* 458. La Granja, Segovia, Spain.

Since Miller published his Catalogue, the following form which is apparently referable to *S. caecutiens* has been named from Western Europe.

1942. *Sorex lapponicus* Melander, K. fysiogr. Sallsk. Lund. Förh. *11:* 134. Vittjarv, Northern Sweden.

Sorex araneus Linnaeus, 1758 — Common Shrew

Approximate distribution of species: Norway, Sweden, Britain, Channel Islands, France, Germany, Bohemia, Poland, Denmark, Holland, Belgium, Switzerland, Italy, Transylvania, Yugoslavia. Through much of the U.S.S.R., where the northern limit runs through the Eurasian tundra, and in many places reaches the Arctic coast; eastwards to the Pacific and Sakhalin; the southern limit skirts the steppes and semi-deserts of the northern Caucasus and Kazakstan, and the range includes Transcaucasia, Mongolia, Manchuria. Bodenheimer lists the species from Palestine. Asia Minor. Apparently also from Shensi, Kansu, Yunnan in China, and the Kurile Islands.

Miller, 1912, *Cat. Mamm. W. Europe*, recognized the following eight races of this species in Western Europe. Some of them, however, are based on colour details which according to Kuzyakin and Bobrinskii are subject to wide individual variation and are likely to be useless for diagnostic purposes.

On the European forms see also Zalesky, 1948, *S.B. Öst. Akad. Wiss. 157:* 129.

SOREX ARANEUS ARANEUS Linnaeus, 1758

1758. *Sorex araneus* Linnaeus, Syst. Nat. 10th ed. *1:* 53. Upsala, Sweden.
1828. *Sorex coronatus* Millet, Faune de Maine-et-Loire, *1:* 18. Blou, Maine-et-Loire, France.
1828. *Sorex personatus* Millet, *loc. cit.* (footnote). Not of Geoffroy, 1827.
1829. *Sorex daubentonii* Cuvier, Regn. Anim. *1:* 127. Not of Erxleben, 1777.
1832. *Sorex concinnus* Wagler, Isis, *25:* 54. Bavaria, Germany.
1832. *Sorex rhinolophus* Wagler, *loc. cit.* Bavaria.
1832. *Sorex melanodon* Wagler, *loc. cit.* Bavaria.
1839. *Sorex macrotrichus* de Sélys Longchamps, Études de Micromamm. 20. No locality.
1839. *Sorex labiosus* Jenyns, Ann. N.H. *2:* 326. Frankfurt, Germany.
1847. *Sorex vulgaris* Nilsson, Illum. Fig. Skand. Fauna, *1:* 75. (*teste* Trouessart.)

Range: Western Continental Europe, from Finland to France, Germany, Bohemia, Norway (part).

SOREX ARANEUS TETRAGONURUS Hermann, 1780

1780. *Sorex tetragonurus* Hermann, in Zimmermann, Geogr. Gesch. *2:* 383. Strasbourg, Eastern France.
1792. *Sorex quadricaudatus* Kerr, Anim. Kingd. 208. Strasbourg, Eastern France.
1834. *Sorex hermanni* Duvernoy, L'Institut, 299. 1835, Mém. Soc. Sci. Nat. Strasbourg, *2:* 3. Near Strasbourg, Eastern France. (Animal, not skull.)
1835. *Sorex fodiens* Duvernoy, Mém. Soc. Sci. Nat. Strasbourg, *2:* 17. (Skull, not animal.) Strasbourg, Eastern France. Not of Schreber, 1777.
(?) 1868. *Sorex vulgaris pallidus* Fitzinger, S.B. Akad. Wiss. Wien, *57*, 1: 488. Locality unknown, probably Italy.
1869. *Sorex vulgaris* var. *nuda* Fatio, Faune Vert. Suisse, *1:* 127. Bernese Oberland.
1869. *Sorex vulgaris* var. *nigra* Fatio, *loc. cit.* Lucerne, Switzerland.
1900. *Sorex vulgaris* var. *vel* subsp. *mollis* Fatio, Rev. Suisse de Zool. *8:* 471. Substitute for *nigra*.
1901. *Sorex araneus alticola* Miller, Proc. Biol. Soc. Washington, *14:* 43. Meiringen, Switzerland.
1905. *Sorex vulgaris crassicaudatus* Fatio, Arch. Sci. Phys. Nat. Genève, *19*, 4: 201. Zermatt, Switzerland. Not of Hemprich & Ehrenberg, 1834.
1905. *Crossopus* ou *Sorex ignotus* Fatio, *loc. cit.* 202. (Mandible, not skull.)
1905. *Sorex araneus carpathicus* Barrett-Hamilton, Ann. Mag. N.H. *15:* 506. Hatszeg, Hunyad, 5,500 ft., Hungary.
1927. *Soricidus monsvairani* Altobello, Rev. Franc. Mamm. *1:* 6. Between Campobasso and the Commune of Busso, Montevairano, Abruzzi, Central Italy. Status *fide* Gulino, 1939, Boll. Mus. Zool. Anat. Comp. Torino, *47:* 136.

Range: Alps and neighbouring parts of Germany, France, Italy, east to Tyrol and Transylvania.

SOREX ARANEUS CASTANEUS Jenyns, 1838

1838. *Sorex tetragonurus* var. β*S(orex) castaneus* Jenyns, Ann. N.H. *1:* 424. Burwell Fen, Cambridgeshire, England.

SOREX ARANEUS EURONOTUS Miller, 1901

1901. *Sorex araneus euronotus* Miller, Proc. Biol. Soc. Washington, *14:* 44. Montréjeau, Haute-Garonne, France.

SOREX ARANEUS SANTONUS Mottaz, 1908

1908. *Sorex santonus* Mottaz, Bull. Soc. Zool. Genève, *1:* 118. Lignières-Sonneville, Charente, France.

SOREX ARANEUS BERGENSIS Miller, 1909

1909. *Sorex araneus bergensis* Miller, Ann. Mag. N.H. *3:* 416. Graven, Hardanger, Norway. Range: Western Norway, from Bergen region at least into Nordland.

SOREX ARANEUS PYRENAICUS Miller, 1909

1909. *Sorex araneus pyrenaicus* Miller, Ann. Mag. N.H. *3:* 416. L'Hospitalet, Ariège, 4,700 ft., France.

SOREX ARANEUS FRETALIS Miller, 1909

1909. *Sorex araneus fretalis* Miller, Ann. Mag. N.H. *3:* 415. Trinity, Jersey, Channel Islands.

Since Miller's Catalogue (1912) the following names have been proposed for Western European forms of this species:

1913. *Sorex araneus peucinius* Thomas, Ann. Mag. N.H. *11:* 216. Ciatal, Dobrudscha, Rumania. According to Ognev, ranges eastwards to Russia.
1913. *Sorex grantii* Barrett-Hamilton & Hinton, Abstr. P.Z.S. 18. P.Z.S. 824. Island of Islay, Hebrides.
1926. *Sorex samniticus* Altobello, Boll. Inst. Zool. Roma, *3:* 102. Province di Campobasso, 600–1,000 m., Southern Italy.
1927. *Sorex araneus clusonae* Wettstein, Anz. Akad. Wiss. Wien, 1. Ruja, Veliki Iom valley, south of the Mali Rainac, Northern Velebit, near Krasno, Croatia, Yugoslavia.
1928. *Sorex araneus csikii* Gyula, Állatt. Közlem Budapest, *25:* 54, 98. Mateszalka and Nagydobos Komitat, Szatmar district, Hungary.
1930. *Sorex araneus bolkayi* Martino, Ann. H.N. Mus. Hung. *27:* 158. Igman Mountains, 1,350 m., Sarajevo district, Yugoslavia.
1937. *Sorex araneus pulcher* Zalesky, Anz. Akad. Wiss. Wien, *74:* 214. Terscheling Island, Holland.
1939. *Sorex araneus petrovi* Martino, Zap. Russk. Nauch. Inst. Byelgrad, *14:* 90. Asan Cesma, Kozuh Mountains, Southern Serbia, Yugoslavia.
1944. *Sorex araneus bohemicus* Stepanek, Rozpr. Ceské Akad. Praha, *53*, 2, No. 30: 2. Lnáí, Southern Czechoslovakia.

On account of individual variation, Kuzyakin and Bobrinskii think that the whole group of relatively large shrews in the U.S.S.R. should be classed as *Sorex araneus*, without division into species and subspecies. Names available from the U.S.S.R. include *S. daphaenodon* (and races) which, in deference to Chaworth-Musters' opinion, is here listed as a distinct species. Besides these, the following, in order of naming, are available from the U.S.S.R.:

1890. *Sorex unguiculatus* Dobson, Ann. Mag. N.H. *5:* 115. Island of Sakhalin. Occurs Hokkaido.
1895. *Sorex raddei* Satunin, Arch. Naturgesch, *1:* 109. Neighbourhood of Kutais, Georgia, Transcaucasia (Ognev, 1938, Mamm. E. Europe, N. Asia, *1:* 220). (Synonyms: *Sorex batis* Thomas, 1913, Ann. Mag. N.H. *11:* 214. Sumela, 30 miles south of Trebizond, 1,000–1,300 m., Asia Minor; and *Sorex caucasicus* Satunin, 1913, Trud. Obshch. Izuch. Chernomorsk. Poberezh. *2:* 21 (V.U.). Bakuryani, Tiflis Govt., Transcaucasia.) Chaworth-Musters thought *raddei* was a distinct species.
1905. *Sorex araneus borealis* Kastschenko, Rec. Tomsk Univ. 85. Neighbourhood of Tomsk, Siberia. According to G. Allen, range includes mountain ranges from Altai eastwards, and Mongolia.
1913. *Sorex roboratus* Hollister, Smiths. Misc. Coll. *60*, 24: 2. Tapucha, Altai Mountains, 125 miles south-east of Bijsk, Siberia.
1914. *Sorex tas* G. Allen, Proc. New England Zool. Club, *5:* 52. Nijni Kolymsk, near mouth of Kolyma River, North-Eastern Siberia.

1914. *Sorex asper* Thomas, Ann. Mag. N.H. *13:* 565. Tekes Valley, Tianshan Mountains, Central Asia.
1921. *Sorex macropygmaeus araneoides* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 315. Valley of River Sosnovka, east coast of Lake Baikal, Siberia. Bobrinskii and Kuzyakin consider this a form of *S. araneus.*
1921. *Sorex araneus tomensis* Ognev, *loc. cit.* 329. Govt. of Tomsk, Siberia.
1921. *Sorex araneus schnitnikovi* Ognev, *loc. cit.* 330. Near Kopal, Semirechyia, East Russian Turkestan.
1921. *Sorex araneus satunini* Ognev, *loc. cit.* 331. Miusaret, Kars region, Caucasus.
1921. *Sorex platycranius* Ognev, *loc. cit.* 334. Near Nikolsk-Ussurijsky, Ussuri region, Eastern Siberia.
1921. *Sorex thomasi* Ognev, *loc. cit.* 336. River Budarman, tributary of River Sosnovka, north-west coast of Lake Baikal, Siberia.
1924. *Sorex araneus tomensis isodon* Turov, C.R. Acad. Sci. U.R.S.S. 111. River Sosovka, Bargusinsk taiga, Lake Baikal, Siberia.
1928. *Sorex araneus jacutensis* Dukelski, Zool Anz. *78:* 102. Village of Suntar, on the middle reach of the River Wiluj, Yakutsk, Siberia.
1931. *Sorex vir turuchanensis* Naumoff, Trans. Polar. Comm. Acad. Sci. U.S.S.R. *4:* 8–10 (*N.V.*). (See Ognev, Mamm. U.S.S.R. *3:* 611.) Yanov Stan, River Turuchan, North-Western Siberia.
(?) 1933. *Sorex dukelskiae* Ognev, Abstr. Zool. Inst. Moscow Univ. *1:* 57. River Artyugin, tributary of Yenesei, Turukhansk district, Siberia.
1933. *Sorex araneus iochanseni* Ognev, *loc. cit.* 61. Bobrovka, on River Kaba, in district of Altaiskaya, in former Semipalatinsk Province, Siberia.
1933. *Sorex araneus uralensis* Ognev, *loc. cit.* 62. Source of River Nyais, Northern Ural, Eastern Russia.
1933. *Sorex gravesi* Goodwin, Amer. Mus. Novit. No. 637, 1. Monoma River, 80 miles east of Troitskov, Maritime Province, Eastern Siberia.
1936. *Sorex isodon ruthenus* Stroganov, Zool. J. Moscow, *15:* 132, 141. Lake Seliger, Kalinin district, Russia.

The following Chinese names are likely to represent *S. araneus:*

Sorex araneus sinalis Thomas, 1912

1912. *Sorex sinalis* Thomas, Ann. Mag. N.H. *10:* 398. Forty-five miles south-east of Feng-hsiang-fu, Shensi, 10,500 ft., China. Ranges to Southern Kansu.

Sorex (?) araneus excelsus G. Allen, 1923

1923. *Sorex excelsus* G. Allen, Amer. Mus. Novit. No. 100, 4. Summit of Hoshan, Peitai, 30 miles south of Chungtien, Yunnan, 13,000 ft., China.

The following form from Japanese territory is likely to represent *S. araneus:*

1933. *Sorex megalotis* Kuroda, Bull. Biogeogr. Soc. Jap, *4,* 1: 47. Chikuradake, Paramushiru, Kurile Islands. Synonym:
(?) 1930. *Sorex paramushirensis* Kishida, Z. Mag. Tokyo, XLII, 373, *nom. nud.*

Sorex daphaenodon Thomas, 1907

Approximate distribution of species: Sakhalin, Kurile Islands, Central and Eastern Siberia, Hokkaido in Japan. Referable to *S. araneus* according to Kuzyakin and Bobrinskii.

SOREX DAPHAENODON Thomas, 1907

1907. *Sorex daphaenodon* Thomas, P.Z.S. 407. Dariné, 25 miles north west of Korsakoff, Sakhalin Island. The following forms were referred to the synonymy of this in Chaworth-Musters' MS.

1914. *Sorex sanguinidens* G. Allen, Proc. New England Zool. Club, *5:* 54. Nijni Kolymsk, near mouth of Kolyma River, North-Eastern Siberia.

1921. *Sorex sibiriensis* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 328. Village Koltchugina, Kuznetsky district, Govt. of Tomsk, Siberia.

1924. *Sorex daphaenodon yesoensis* Kishida, Monogr. Jap. Mamm. 168. Kuroda, 1928, J. Mamm. *9:* 222. Province of Nemuro, Hokkaido, Japan.

1933. *Sorex daphaenodon orii* Kuroda, Bull. Biogeogr. Soc. Japan, *4,* 1: 48. Nasauki, in Paramushiru, North Kurile Islands. (*Sorex orii* Kishida, 1930, Zool. Mag. Tokyo, *42:* 373, *nom. nud.*)

1933. *Sorex daphaenodon scaloni* Ognev, Abstr. Zool. Inst. Moscow Univ. *1:* 63. Mouth of River Motliki, basin of River Taza, Turukhansk district, Northern Central Siberia.

Sorex buchariensis Ognev, 1921

Approximate distribution of species: Russian Pamir Mountains.

SOREX BUCHARIENSIS Ognev, 1921

1921. *Sorex buchariensis* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 320. Valley of River Davan-su, North-West Russian Pamir Mountains.

Sorex pacificus Coues, 1877 Giant Shrew

Approximate distribution of species: Ussuri region of Eastern Siberia; North-Western United States (California, Oregon). For note on status of Ussuri form, see above (page 44).

SOREX PACIFICUS Coues, 1877

1877. *Sorex pacificus* Coues, Bull. U.S. Geol. & Geogr. Surv. Terr. *3:* 650 (*N.V.*). Fort Umpqua, mouth of Umpqua River, Douglas County, Oregon, U.S.A.

(?) 1937. *Sorex mirabilis* Ognev, Bull. Soc. Nat. Moscou, Sect. Biol. *46:* 268, 270. Kiskinka River valley, Ussuri region, Eastern Siberia.

Sorex alpinus Schinz, 1837 Alpine Shrew

Approximate distribution of species: France, south to Pyrenees, Germany, Switzerland, Italy, Yugoslavia, Transylvania, Poland.

SOREX ALPINUS ALPINUS Schinz, 1837

1837. *Sorex alpinus* Schinz, Neue Denkschr. Allgem. Schweiz. Gesell. Naturwiss. Neuchatel, *1:* 13. St. Gothard Pass, Switzerland.

? 1840. *Sorex antinorii* Bonaparte, Iconogr. Faun. Ital. *1:* fasc. 29, no exact locality, "probably not a European species" (Miller, 1912).

(?) 1870. *Sorex intermedius* Cornalia, Catal. Descr. Mamm. Ital. 27. Hills of Brianza, Como, Italy. (Part, body. See Sordelli, 1899.)

(?) 1899. *Sorex alpinus* var. *longobarda* Sordelli, Atti Soc. Ital. Sci. Nat. Milano, *38:* 363. (Synonym of *intermedius.*)

Range: France, Switzerland, Transylvania (Pyrenees, Jura, Alps, Tyrol, etc.).

SOREX ALPINUS HERCYNICUS Miller, 1909

1909. *Sorex alpinus hercynicus* Miller, Ann. Mag. N.H. *3:* 417. Mäuseklippe, Bode Valley, Harz Mountains, Germany. Range: Harz Mountains and Riesengebirge, Germany.

Sorex cylindricauda Milne-Edwards, 1872 Stripe-backed Shrew

Approximate distribution of species: Yunnan, Szechuan, Kansu, Shensi, in China; and Northern Burma.

SOREX CYLINDRICAUDA CYLINDRICAUDA Milne-Edwards, 1872

1872. *Sorex cylindricauda* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 92 (footnote). Moupin, Western Szechuan, China.

1911. *Sorex bedfordiae* Thomas, Abstr. P.Z.S. No. 90, 3. P.Z.S. 164. Omisan, 9,500 ft., Szechuan, China.

1911. *Sorex wardi fumeolus* Thomas, Abstr. P.Z.S. No. 100, 49. 1912, P.Z.S. 132. Weichoe, on Siho River, Western Szechuan, 6,000–11,000 ft., China.

SOREX CYLINDRICAUDA WARDI Thomas, 1911

1911. *Sorex wardi* Thomas, Abstr. P.Z.S. No. 90, 3. P.Z.S. 165. Taochou, 9,000 ft., Kansu, China.

SOREX CYLINDRICAUDA GOMPHUS G. Allen, 1923

1923. *Sorex bedfordiae gomphus* G. Allen, Amer. Mus. Novit. No. 100: 3. Mucheng, Salween drainage, Western Yunnan, 7,000 ft., China. Ranges to Northern Burma.

Incertae sedis

Sorex pusillus Gmelin, 1774, Reise, *3:* 499, pl. 57, fig 1. Persia, no exact locality. Perhaps a *Crocidura*, and probably unidentifiable.

Sorex (?) *shinanensis* (described as *Urotrichus talpoides shinanensis*) Yagi, 1927, Zool. Mag. Tokyo, *39:* 201 (*N.V.*). Kitazawatoge, between Senjogatake and Higashi-Komagatake, in Southern Japanese Alps, Hondo, Japan. Status *fide* Kuroda, 1938, List Jap. Mammals. Synonym, possibly, 1937, *Sorex dorichurus* Kishida, Rigaku Kai, *35*, No. 410: 742. Senjogatake, Southern Japanese Alps, Hondo. (*N.V.*)

Genus **BLARINELLA** Thomas, 1911

1911. *Blarinella* Thomas, P.Z.S. 166. *Sorex quadraticauda* Milne-Edwards.

1 species: *Blarinella quadraticauda*, page 56

Blarinella quadraticauda Milne-Edwards, 1872 Short-tailed Moupin Shrew

Approximate distribution of species: Szechuan, Yunnan and Kansu, China; Northern Burma.

BLARINELLA QUADRATICAUDA QUADRATICAUDA Milne-Edwards, 1872

1872. *Sorex quadraticauda* Milne-Edwards, Rech. H.N. Mamm. 261, pl. 38a, figs. 2–2d, pl. 38b, fig. 2. Moupin, Szechuan, China.

BLARINELLA QUADRATICAUDA GRISELDA Thomas, 1912

1912. *Blarinella griselda* Thomas, Ann. Mag. N.H. *10:* 400. Forty-two miles south-east of Taochow, 10,000 ft., Kansu, China.

BLARINELLA QUADRATICAUDA WARDI Thomas, 1915

1915. *Blarinella wardi* Thomas, Ann. Mag. N.H. *15:* 339. Hpimaw, 26° N., 98.35° E., 8,000 ft., Upper Burma. Range includes Yunnan.

Genus **SORICULUS** Blyth, 1854

1854. *Soriculus* Blyth, J. Asiat. Soc. Bengal, *23:* 733. *Corsira nigrescens* Gray.
1907. *Chodsigoa* Kastschenko, Ann. Mus. Zool. Acad. St. Pétersb., *10:* 251. *Soriculus salenskii* Kastschenko (see G. Allen, 1938: 104). Valid as a subgenus.
Episoriculus subgen. nov. Type species: *Sorex caudatus* Horsfield. Valid as a subgenus, to contain also *S. leucops* Horsfield.[1]

6 species: *Soriculus caudatus*, page 59
Soriculus hypsibius, page 60
Soriculus leucops, page 59
Soriculus lowei, page 61
Soriculus nigrescens, page 58
Soriculus salenskii, page 60

Of these species, *hypsibius*, *salenskii* and *lowei* belong to the subgenus *Chodsigoa* which has 28 instead of 30 teeth. The vanishing tooth – the last upper unicuspid – is vestigial in the other species and, as has already been pointed out by Osgood, its presence can at most be of subgeneric value. The first name in the subgenus *Chodsigoa* is *S. hypsibius*, a relatively short-tailed species in which the hindfoot is about 11–13 mm., and according to G. Allen it occurs in parts of China with an allied longer-tailed species hitherto known as *smithi*, but here considered as representing the earlier name *salenskii*. This has the hindfoot about 16–20 mm. Typical *salenskii*

[1] Subgenus *Chodsigoa*: with eight upper teeth.
Subgenus *Soriculus*: with nine upper teeth, the very small extra upper unicuspid being present. Fossorial, tail short, usually less than 70 per cent. of head and body (in all but *caudatus* averages less than 60 per cent.). Rather large, head and body usually more than 70 mm. Forefeet enlarged.
Subgenus *Episoriculus*: with nine upper teeth, the very small extra upper unicuspid being present. Not fossorial; tail long, approximately 90–145 per cent. average of head and body. Small, head and body length usually less than 70 mm. (perhaps excepting *S. c. baileyi*). Forefeet not enlarged.

seems to be only known by one specimen, which has an unusually long tail (over 140 per cent. of head and body length) and a hindfoot of 20.5 mm., but according to Anthony, 1941, *Field Mus. Publ. Zool. 27:* 71, the hindfoot in forms which he referred to *smithii* can be as much as 20 mm.; and as in some forms currently referred to *smithi* the tail is also considerably longer than the head and body (though less elongated than in the type of *salenskii*), there seems not much reason why the name *salenskii* should not be regarded as the prior name for the *smithi* section of races. The third species of *Chodsigoa*, *lowei*, has a short hindfoot, as in *hypsibius*, but a very long tail, as is often the case in *salenskii*, combined with some cranial peculiarities pointed out by its describer, and although not well known is tentatively regarded as valid.

In those species hitherto referred to *Soriculus* (with 30 teeth), there are two very distinct groups. The type, *nigrescens*, is a rather large, heavily built fossorial shrew with enlarged foreclaws and a short tail which is rarely as much as 70 per cent. of the head and body. The other two species, *caudatus* and *leucops* are rather small, slender shrews with small foreclaws and a long tail which is on average 90 per cent. or more of the head and body (possibly excepting the very little-known Formosan race) (the species *caudatus* as a rule has the tail 90–109 per cent. of the head and body, and the species *leucops* has it nearly half as long again as the head and body). The external difference between the *nigrescens* group and the *caudatus-leucops* group is so well marked that we feel subgeneric division is advisable, and propose the name *Episoriculus*, with type *S. caudatus*. The distinction between the two subgenera is greater than between *Sorex* and *Blarinella* in external characters. It is necessary to note that Blanford used the name *S. macrurus* for *S. leucops*, but *macrurus* was a *nomen nudum* except from Blanford (1888), and Osgood has shown that the name *leucops* has priority dating from 1855. G. Allen regarded the form *sacratus* as a race of *S. caudatus*, but more recently Anthony (1941) has revived *sacratus* as a specific name because a form which he calls a race of *sacratus* occurs with *caudatus* in Northern Burma. He suggests (page 69) that it is possible that the two animals have different habitat preferences and thus remain separated in the same locality; until the contrary is proved we follow G. Allen. Two rather differentiated forms, *radulus* and *baileyi*, have been named since Blanford classified the Indian species, but neither are so distinct in our opinion that they need be given specific rank; the first is here considered to represent *nigrescens*, and *baileyi* is here referred to *caudatus*. The status of the two named Formosan forms of the genus is not clear. The pigmentation on their teeth is extremely weak or untraceable, and the Formosan *Chodsigoa* is based on a skull, the skin being unknown.

The available species of *Soriculus* may be distinguished as below:

1. Eight upper teeth. Foreclaws not enlarged. (Subgenus *Chodsigoa*.) ——2
   Nine upper teeth, the last upper unicuspid exceedingly reduced. ——4

2. Hindfoot about 16–20 mm. (Tail usually as long as or longer than head and body.) *Soriculus salenskii*
   (Form seen: *smithi*.)
   Hindfoot about 11–15 mm. ——3

3. Tail much longer than head and body. *Soriculus lowei*
(Type in B.M.)
Tail about 80 per cent., or less, of head and body. *Soriculus hypsibius*
(Forms seen: *hypsibius, larvarum, lamia.*)

4. Tail normally less than three-quarters of head and body length, its length 50 mm. and less. Foreclaws enlarged. (Subgenus *Soriculus.*) *Soriculus nigrescens*
(Forms seen: *nigrescens, centralis, caurinus, pahari, radulus.*)
Tail normally 90 per cent. or more of head and body, its length usually over 50 mm. Foreclaws small. (Subgenus *Episoriculus.*) ——5

5. Tail about 90–109 per cent. of head and body, its length below 80 mm. *Soriculus caudatus*
(Forms seen: *caudatus, sacratus, fumidus* (no measured skins), *baileyi.*)
Tail as a rule about 145 per cent. of head and body, its length usually over 80 mm. *Soriculus leucops*
(Forms seen: *leucops, macrurus, irene.*)

Subgenus *SORICULUS* Blyth, 1854

Soriculus nigrescens Gray, 1842 Sikkim Large-clawed Shrew

Approximate distribution of species: Bhutan, Kumaon, Sikkim, Nepal, Mishmi, Northern Burma.

SORICULUS NIGRESCENS NIGRESCENS Gray, 1842

1842. *Corsira nigrescens* Gray, Ann. Mag. N.H. *10:* 261. Darjeeling, India. (Hinton, 1922.)

1842. *Sorex aterrimus* Blyth, J. Asiat. Soc. Bengal, *12:* 928, *nom. nud.* 1854, J. Asiat. Soc. Bengal, *23:* 733. Darjeeling.

1849. *Sorex sikimensis* Hodgson, Ann. Mag. N.H. *3:* 203, *nom. nud.* 1855, J. Asiat. Soc. Bengal, *16:* 111. Darjeeling.

1863. *Sorex oligurus* Gray, Cat. Hodgson Coll. Nepal & Tibet, 2nd ed. 8, Sikkim *nom. nud.* .

1863. *Sorex holosericeus* Gray, *loc. cit.* 9. Darjeeling *nom. nud.* .

SORICULUS NIGRESCENS RADULUS Thomas, 1922

1922. *Soriculus radulus* Thomas, J. Bombay N.H. Soc. *28:* 429. Dreyi, 5,140 ft., Mishmi Hills, Northern Assam. Ranges to North Burma.

SORICULUS NIGRESCENS PAHARI Hinton, 1922

1922. *Soriculus nigrescens pahari* Hinton, J. Bombay N.H. Soc. *28:* 1053. Gnatong, 12,300 ft., Sikkim.

SORICULUS NIGRESCENS CAURINUS Hinton, 1922

1922. *Soriculus nigrescens caurinus* Hinton, J. Bombay N.H. Soc. *28:* 1054. Khati, 7,600 ft., Kumaon, Northern India.

Soriculus nigrescens centralis Hinton, 1922

1922. *Soriculus nigrescens centralis* Hinton, J. Bombay N.H. Soc. *28:* 1054. Bouzini, Nepal.

Subgenus *EPISORICULUS* Ellerman & Morrison-Scott, 1951

Soriculus caudatus Horsfield, 1851 Hodgson's Brown-toothed Shrew

Approximate distribution of species: Kumaon, Sikkim, Mishmi, Northern Burma; Szechuan, Yunnan and apparently Formosa; Tonkin, in Indo-China.

Soriculus caudatus caudatus Horsfield, 1851

1851. *Sorex caudatus* Horsfield, Cat. Mamm. Mus. E. India Co. 135. Darjeeling, India (*fide* Chaworth-Musters).
(?) 1863. *Sorex homourus* Gray, Cat. Hodgson's Coll. B.M., 2nd ed. 8, *nom. nud.* Sikkim.
1877. *Soriculus gracilicauda* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 282. Sikkim.
1890. *Soriculus minor* Dobson, Monogr. Insectiv. *3*, pl. xxiv, figs. 2–2b. Manipur.

Range: Kumaon, Sikkim, Northern Burma.

Soriculus caudatus sacratus Thomas, 1911

1911. *Soriculus sacratus* Thomas, Abstr. P.Z.S. 4. P.Z.S. 165. Omei Shan, 6,000 ft., Szechuan, China.

Soriculus (?) caudatus fumidus Thomas, 1913

1913. *Soriculus fumidus* Thomas, Ann. Mag. N.H. *11:* 216. Mt. Arizan, 8,000 ft., Central Formosa.

Soriculus caudatus baileyi Thomas, 1914

1914. *Soriculus baileyi* Thomas, J. Bombay N.H. Soc. *22:* 683. Tsu River, Mishmi Hills, 7,500 ft., north of Assam. Range includes Tonkin, Indo-China.

Soriculus caudatus umbrinus G. Allen, 1923

1923. *Soriculus caudatus umbrinus* G. Allen, Amer. Mus. Novit. No. 100, 5. Mucheng, Salween drainage, South-Western Yunnan, 7,000 ft., China. Ranges into Northern Burma.

Soriculus leucops Horsfield, 1855 Indian Long-tailed Shrew

Approximate distribution of species: Nepal, Sikkim, Northern Burma; Szechuan and Yunnan, China.

Soriculus leucops Horsfield, 1855

1855. *Sorex leucops* Horsfield, Ann. Mag. N.H. *16:* 111. Nepal.
(?) 1863. *Sorex nivicola* Gray, Cat. Hodgson's Coll. B.M., 2nd ed. 8, *nom. nud.*
1863. *Sorex macrurus* Hodgson, *loc. cit.* 9, *nom. nud.* Not *macrourus* Lehmann, 1822.
1888. *Soriculus macrurus* Blanford. Fauna Brit. India, Mamm. *1:* 231. Darjeeling, Northern India.
1911. *Soriculus irene* Thomas, Abstr. P.Z.S. 49. 1912, P.Z.S. 132. Yuanchinghsien, South-Western Szechuan, 5,200 ft., China.

Subgenus *CHODSIGOA* Kastschenko, 1907

Soriculus hypsibius de Winton, 1899 de Winton's Shrew

Approximate distribution of species: Yunnan and Szechuan, northwards to Kansu, Shensi and Chihli, China.

SORICULUS HYPSIBIUS HYPSIBIUS de Winton, 1899

1899. *Soriculus hypsibius* de Winton, P.Z.S. 574. Yangliupa, North-Western Szechuan, China.

1907. *Soriculus (Chodsigoa) berezowskii* Kastschenko, Ann. Mus. Zool. Acad. St. Pétersb. *10:* 252. Chodsigou, Northern Szechuan.

Range: Yunnan (part), Szechuan, Shensi.

SORICULUS HYPSIBIUS LARVARUM Thomas, 1911

1911. *Chodsigoa larvarum* Thomas, Abstr. P.Z.S. 49. 1912, P.Z.S. 133. Eastern Tombs, 65 miles east of Pekin, 1,000 ft., Chihli, China.

SORICULUS HYPSIBIUS LAMULA Thomas, 1912

1912. *Chodsigoa lamula* Thomas, Ann. Mag. N.H. *10:* 399. Forty-six miles south-east of Taochou, Kansu, 9,500 ft., China.

SORICULUS HYPSIBIUS PARVA G. Allen, 1923

1923. *Chodsigoa hypsibia parva* G. Allen, Amer. Mus. Novit. No. 100: 5. Ssushanchang, Likiang Range, Western Yunnan, 9,000 ft., China.

Soriculus salenskii Kastschenko, 1907 Salenski's Shrew

Approximate distribution of species: as here understood, Shensi, Szechuan and Yunnan, in China; Northern Burma.

SORICULUS SALENSKII SALENSKII Kastschenko, 1907

1907. *Soriculus (Chodsigoa) salenskii* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *10:* 253. G. Allen, 1938, Mamm. China & Mongolia, *1:* 108. Linganfu, Northern Szechuan, China. (Tate (1947) thinks this is a distinct species from *S. smithii* on account of its longer tail.)

SORICULUS SALENSKII SMITHI Thomas, 1911

1911. *Chodsigoa smithii* Thomas, Abstr. P.Z.S. 4. P.Z.S. 166. Tatsienlu, Szechuan, 9,000 ft., China. Range includes Tsingling Mountains, Shensi, China.

SORICULUS SALENSKII PARCA G. Allen, 1923

1923. *Chodsigoa smithii parca* G. Allen, Amer. Mus. Novit. No. 100: 6. Homushu Pass, Western Yunnan, 8,000 ft., China. Ranges to Northern Burma (part).

SORICULUS SALENSKII FURVA Anthony, 1941

1941. *Chodsigoa smithii furva* Anthony, Field Mus. Publ. Zool. *27:* 71. Mt. Imaw Bum, 9,000 ft., Northern Burma.

Soriculus lowei Osgood, 1932 Lowe's Shrew

Approximate distribution of species: Tonkin, in Indo-China.

SORICULUS LOWEI Osgood, 1932

1932. *Chodsigoa lowei* Osgood, Field Mus. Publ. Zool. *18:* 249. Chapa, Tonkin, Indo-China.

Incertae sedis

1913. *Chodsigoa sodalis* Thomas, Ann. Mag. N.H. *11:* 217. Mt. Arizan, 8,000 ft., Central Formosa. Based on a single skull with scarcely pigmented teeth; skin unknown.

Genus **NEOMYS** Kaup, 1829

1829. *Neomys* Kaup, Skizz. Europ. Thierwelt, *1:* 117. *Sorex daubentonii* Erxleben = *Sorex fodiens* Pennant.
1829. *Leucorrhynchus* Kaup, *loc. cit.* 118. *Sorex lineatus* Geoffroy = *Sorex fodiens* Pennant.
1829. *Hydrogale* Kaup, *loc. cit.* 123. *Sorex remifer* Geoffroy = *Sorex fodiens* Pennant.
1832. *Crossopus* Wagler, Isis, 275. *Sorex fodiens* Pennant.
1835. *Hydrosorex* Duvernoy, Mém. Soc. Sci. Nat. Strasbourg, *2:* 19. *Sorex fodiens* Pennant.
1835. *Amphisorex* Duvernoy, *loc. cit.* 23. *Sorex hermanni* Duvernoy = *Neomys fodiens* skull plus *Sorex araneus tetragonurus*, skin.
1838. *Pinalia* Gray, P.Z.S. *1837:* 126. Synonym of *Crossopus ex* Gray M.S.

2 species: *Neomys anomalus*, page 64
Neomys fodiens, page 61

This genus was dealt with at some length by Miller, 1912, *Cat. Mamm. W. Europe*, 65. Bobrinskii recognizes two species only, which are both compared in Miller (who subdivided *anomalus*).

Neomys fodiens Pennant, 1771 European Water-Shrew

Approximate distribution of species: Britain, France (south to Pyrenees), Denmark, Belgium, Holland, Switzerland, Italy, Transylvania, Germany, Norway, Sweden, Finland; in Russia the northern limit runs almost along the coast of the Arctic Ocean, and in Western Siberia a little south of the Arctic Circle (apparently to about Lake Baikal); in the Far East there have been individual finds on the lower Amur and coast of Sea of Okhotsk, and Sakhalin. The southern limit skirts the Northern Caucasus, the Volgo-Ural and Kazakstan steppes. Bodenheimer recorded this species from Palestine. But it seems more likely that the Palestine form is *anomalus*, since the latter is the water-shrew of Asia Minor and the Mediterranean area.

NEOMYS FODIENS FODIENS Pennant, 1771

1771. *Sorex fodiens* Pennant, Synopsis Quadrupeds, 308. Berlin, Germany. (*Sorex fodiens* Schreber, 1777, Säugeth, *3:* 571. Berlin, Germany.)
1776. *Sorex aquaticus* Muller, Natursyst. Suppl. u. Regist. Band. 36. France. Not of Linnaeus, 1758.
1777. *Sorex daubentonii* Erxleben, Syst. Regn. Anim. *1:* 124. Burgundy, France.
1780. *Sorex carinatus* Hermann, in Zimmermann, Geogr. Gesch. *2:* 383. Strasbourg, Eastern France.
1792. *Sorex liricaudatus* Kerr, Anim. Kingd. 208. Strasbourg, Eastern France.
1793. *Sorex fluviatilis* Bechstein, Gemeinn. Nat. Deutschlands, *3:* 746. (Suggested, but not adopted, as preferable to *fodiens.*)
1793. *Sorex eremita* Meyer, Zool. Annalen, *1:* 323. Thuringia, Germany.
(?) 1800. *Sorex canicularius* Bechstein, Thomas Pennant's Allgem. Uebers. Vierf. Thiere, *2:* 541. Renaming of *fodiens* Bechstein, 1793.
1800. *Sorex fodiens albus* Bechstein, *loc. cit.* 723.
1811. *Sorex hydrophilus* Pallas, Zoogr. Rosso. Asiat. 130. Berlin, Germany.
1811. *Sorex lineatus* Geoffroy, Ann. Mus. H.N. Paris, *17:* 181. Paris, France.
1811. *Sorex remifer* Geoffroy, *loc. cit.* 182. Abbeville, Somme, France.
1818. *Sorex collaris* Desmarest, Nouv. Dict. H.N. *22:* 65. Islands at mouth of Escaut and Meuse, Holland.
1822. *Sorex macrourus* Lehmann, Obs. Zool. Faun. Hamburg, *1:* 5. Sachsenwald, Schleswig-Holstein, Germany. (*N.V.*)
1826. *Sorex amphibius* Brehm, Ornis, *2:* 38. Renthendorf, Thuringia, Germany.
1826. *Sorex natans* Brehm, *loc. cit.* 44. Renthendorf, Thuringia, Germany.
1826. *Sorex stagnatilis* Brehm, *loc. cit.* 47. Renthendorf, Thuringia, Germany.
1830. *Sorex rivalis* Brehm, Isis, 1128. Renthendorf, Thuringia, Germany.
1832. *Sorex musculus* Wagler, Isis, 54. Bavaria, Germany.
1832. *Sorex psilurus* Wagler, *loc. cit.* Bavaria, Germany.
1834. *Sorex nigripes* Melchior, Den Danske Stats og Norges Pattedyr, 68. Sielland, Denmark.
1835. *Sorex hermanni* Duvernoy, Mém. Soc. Sci. Nat. Strasbourg, *2:* 23. (Part; the skull only; the skin is another form.) Strasbourg, Eastern France.
1838. *Amphisorex linneana* Gray, Ann. N.H. *2:* 287. North Bothnia, Sweden.
1838. *Amphisorex constrictus* Duvernoy, Mém. Mus. H.N. Strasbourg, Suppl. *2:* 4.
1839. *Sorex fodiens* var. *leucotis* de Sélys Longchamps, Études de Micromamm. 142, *nom. nud.*
1839. *Sorex fodiens* var. *albiventris* de Sélys Longchamps, *loc. cit.*, *nom. nud.*
(?) 1845. *Sorex fodiens nigricans* Nilsson, Atti della sesta Riunione degli Sci. Ital. Torino, *1844:* 357. Sweden (*nom. nud.*).
1868. *Sorex fimbriatus* Fitzinger, S.B. Akad. Wiss. Wien. *57,* 1: 610. Not of Wagler, 1832.
1868. *Crossopus ciliatus griseogularis* Fitzinger, *loc. cit.* 623. Chartres, Eure-et-Loire, France.
1870. *Sorex intermedius* Cornalia, Cat. Desc. Mamm. Ital. 27. Hills of Brianza, Como, Italy. (Part, tail only. See Sordelli, 1899.)
1899. *Sorex alpinus* var. *longobarda* Sordelli, Atti Soc. Ital. Sci. Nat. Milano, *38:* 363. MS. synonym of *intermedius.*
1901. *Neomys fodiens minor* Miller, Proc. Biol. Soc. Washington, *14:* 45. Montréjeau, Haute-Garonne, France.

1905. *Crossopus* ou *Sorex ignotus* Fatio, Arch. Sci. Phys. Nat. Genève, *19*, 4: 202. Switzerland. (Skull, not mandible.)
1905. *Neomys fodiens naias* Barrett-Hamilton, Ann. Mag. N.H. *15:* 507. Hatszeg, Hunyad, Hungary.
1906. *Neomys fodiens nanus* Lydekker, Zool. Record, *42*, Mamm. 34. Accidental renaming of *naias*.
(?) 1914. *Neomys leptodactylus* Satunin, Mitt. Kauk. Mus. *8:* 90. Kasikoporan, Transcaucasia.
(?) 1924. *Neomys fodiens alpestris* Burg, Weidmann, Pallasia, *2*, 2: 90. Engadine (*nom. nud.* Original *N.V.*).
1926. *Neomys fodiens balkaricus* Ognev, Bull. Sci. Inst. Explor. Caucasus, *1:* 42, 55. Neighbourhood of the town of Nalchik, Terek region, Caucasus.
1931. *Neomys fodiens stresemanni* Stein, Mitt. Zool Mus. Berlin, *17:* 278. (Status *fide* Pohle, 1933.) Reipzig, near Frankfurt-on-Oder, Germany.

Range: Norway, Sweden, Belgium, France, Germany, Hungary, Switzerland, Italy, to Russia, Transcaucasia and Western Siberia.

Neomys fodiens bicolor Shaw, 1791

1791. *Sorex bicolor* Shaw, Naturalist's Miscell. *2*, pl. 55. Oxford, England.
1805. *Sorex ciliatus* Sowerby, Brit. Misc. *49:* 103. Norfolk, England.
1838. *Amphisorex pennantii* Gray, P.Z.S. *1837:* 125. England.
1840. *Crossopus sowerbyi* Bonaparte, Iconogr. Faun. Ital. *1*, fasc. 29, in text under *C. fodiens*.

Range: England, Wales, Scotland.

Neomys fodiens orientis Thomas, 1914

1914. *Neomys fodiens orientis* Thomas, Ann. Mag. N.H. *13:* 564. Swamps of River Kammanajaretschka, near Djarkent, Semirechyia, Russian Central Asia.
1915. *Neomys fodiens orientalis* Hinton, Zool. Record, *51*, Mamm. (1914) 44. Accidental renaming of *orientis* Thomas.
(?) 1921. *Neomys fodiens brachyotus* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 343. Near Kopal, Semirechyia, Russian Central Asia.
(?) 1921. *Neomys argenteus* Ognev, *loc. cit.* 346. Coast of Lake Baikal, Siberia.

Range: Bobrinskii quotes *brachyotus* from Semirechyia, the Altai, Tarbagatai Mountains, Central Siberia and the Far East, but *orientis* antedates.

Neomys fodiens dagestanicus Heptner & Formozov, 1928

1928. *Neomys fodiens dagestanicus* Heptner & Formozov, Zool. Anz. *77:* 273. Fort Gunib, 6,000 ft., Daghestan, Eastern Caucasus.

Neomys fodiens watasei Kuroda, 1941

1941. *Neomys fodiens watasei* Kuroda, Bull. Biogeogr. Soc. Tokyo, *11:* 114. Toyohara City, Sakhalin Island. (*Neomys watasei* Kishida, 1930, Zool. Mag. Tokyo, *42:* 372, *nom. nud.*).

Incertae sedis

1913. *Neomys schelkovnikovi* Satunin, Trud. Obshch. Izuch. Chernomorsk. Poberezh, *2:* 24. (*N.V.*) Ushkul village, Svanetiya, Transcaucasia. (Chaworth-Musters regarded this as a form of *N. fodiens*.)

Neomys anomalus Cabrera, 1907 Mediterranean Water-Shrew

Approximate distribution of species: Spain, Switzerland, Italy, Carpathian Mountains, Pyrenean France, Yugoslavia, Greece, Poland, Crimea, Ukraine to Voronezh region in Russia, and Asia Minor.

Neomys anomalus anomalus Cabrera, 1907

1907. *Neomys anomalus* Cabrera, Ann. Mag. N.H. *20:* 214. 1 September 1907. San Martin de la Vega, Madrid, Spain.

Neomys anomalus milleri Mottaz, 1907

1907. *Neomys milleri* Mottaz, Mém. Soc. Zool. France, *20:* 22. 20 September 1907. Chesières, Alpes Vaudoises, 1,230 m., Switzerland.

1921. *Neomys soricioides* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 347. Beloviezh, Grodno district, Poland.

Neomys anomalus teres Miller, 1908

1908. *Neomys teres* Miller, Ann. Mag. N.H. *1:* 68. Twenty-five miles north of Erzerum, 7,000 ft., Asia Minor.

Neomys anomalus mokrzeckii Martino, 1917

1917. *Neomys fodiens mokrzeckii* Martino, Bull. Soc. Nat. Crimée, *7:* 1 (of reprint). Kholodnaya Water, River Alma, Crimea. (Although this form was named as a race of *fodiens*, Bobrinskii states that that species is absent from Crimea, and that only *N. anomalus* occurs there.)

Neomys anomalus josti Martino, 1940

1940. *Neomys milleri josti* Martino, Ann. Mag. N.H. *5:* 494. Ohrid, Macedonia, Southern Yugoslavia.

Genus **SUNCUS** Ehrenberg, 1833

1833. *Suncus* Ehrenberg, in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* k. *Suncus sacer* Ehrenberg.

1839. *Pachyura* de Sélys Longchamps, Études de Micromamm. 32. *Sorex etruscus* Savi.

1843. *Sunkus* Sundevall, K. Svenska. Vetensk. Akad. Handl. *1842:* 175. Emendation.

1855. *Paradoxodon* Wagner, Schreber's Saugeth. Suppl. *5:* 805. *Sorex melanodon* Blyth = *Crocidura* (*Pachyura*) *nitidofulva* Anderson.

1897. *Plerodus* Schulze, Helios, Berlin, *14:* 90. *Crocidura suavolens* Blasius (nec Pallas) = *Sorex etruscus* Savi.

4 species in the area covered by this list:

Suncus davi, page 69
Suncus etruscus, page 68
Suncus murinus, page 65
Suncus stoliczkanus, page 69

The retention of the genus *Suncus*, based on species which have an extra small upper unicuspid tooth, is largely a matter of convenience. Strictly speaking, it is not

more than a subgenus of *Crocidura*. The Indian members of the genus were reviewed by Mrs. Lindsay, 1929, *J. Bombay N.H. Soc. 33:* 326. This author recognizes an extraordinary number of species. There appear to be in the region now under discussion a pygmy species, for which the first name is *etruscus*, a giant species, for which the first name is currently regarded as *murinus*, and a medium-sized group for which the first name is *stoliczkanus*. According to data from Lindsay, Miller and Bobrinskii, and examination of types and certain other specimens in London, the *etruscus* group contains forms which average as a rule 48 mm. or less in head and body length; the type of the Ceylon race and the form *nitidofulvus* are both a little larger (head and body 58 mm.). The Indian *perrotteti* and its allies has not to our knowledge been demonstrated to be other than racially separable from the European and South-West Asian *etruscus*. The giant species, *murinus*, is very widely distributed in the tropics partly owing to human introduction, as it is a commensal species. Lindsay says the name *murinus* should be discarded as unidentifiable, and uses *caeruleus* for the giant house shrews, but *murinus*, which is used by Chasen and G. Allen, appears no more unidentifiable than several other very early names which are in current use for small mammals. From Lindsay's measurements, forms here referred to *murinus* average at least 93 mm. in head and body length, but the majority of specimens exceed 100 mm. The medium-sized group is much less common than the other two, and is confined to Western India. The head and body length in B.M. material averages 70–71 mm. Only one specimen examined for *stoliczkanus* is under 60 mm., and only one is over 80 mm. The tail averages less than 70 per cent. of the head and body. Lindsay's measurements give an average of 70–73 mm. in head and body length for the group. *S. dayi*, which is little known, may well be a valid species. The type is darker than other specimens of the *stoliczkanus* group examined. The tail seems considerably less reduced, but unfortunately the type specimen does not bear measurements. In the type, the extra upper unicuspid, characteristic of the genus, is unusually large. In all probability it is a member of the *stoliczkanus* group.

Suncus murinus Linnaeus, 1766 House Shrew

Approximate distribution of species: Philippines, Celebes, Borneo, Sumatra, Java, Bali, Malay States, to Annam, South-Eastern China, Formosa, Japan, Burma, westwards to Kashmir, southwards to Ceylon; Arabia, Palestine, Egypt, Abyssinia, etc. Details of distribution apparently modified by human agency.

Suncus murinus murinus Linnaeus, 1766

1766. *Sorex murinus* Linnaeus, Syst. Nat. 12th ed. *1:* 74. Java.
1785. *Sorex myosurus* Pallas, Acta Acad. Sci. Petrop. *1781*, 2: 337. Substitute for *murinus* Linnaeus.
1792. *Sorex caerulaeus* Kerr, Anim. Kingd. 207. (Evidently a *lapsus* for *caeruleus*.) Java. (For status, see Chasen, 1940, Handlist Malaysian Mamm. 19.)
1811. *Sorex indicus* Geoffroy, Ann. Mus. H.N. Paris, *17:* 183. Pondicherry, India.
1827. *Sorex sonneratii* Geoffroy, Mém. Mus. H.N. Paris, *15:* 132. India.
1831. *Sorex serpentarius* Geoffroy in Bélanger, Voy. Indes Orient. Zool. 119. Pondicherry, India.
1845. *Sorex nemorivagus* Hodgson, Ann. Mag. N.H. *15:* 269. Central region of Nepal.

SUNCUS MURINUS MURINUS [*contd.*]

1859. *Sorex sacinhoei* Blyth, J. Asiat. Soc. Bengal, *28:* 285. Amoy, Southern China.
1860. *Sorex albinus* Blyth, J. Asiat. Soc. Bengal, *29:* 90, (*nom. nud.*).
1870. *Crocidura microtis* Peters, Mber. Preuss. Akad. Wiss. 589. Hong Kong, China.
1870. *Crocidura* (*Pachyura*) *waldemarii* Peters, *loc. cit.* 590. Bengal.
1870. *Crocidura* (*Pachyura*) *media* Peters, *loc. cit.* 592. Paradenia, Ceylon.
(?) 1877. *Crocidura* (*Pachyura*) *pealana* Anderson, J. Asiat. Soc. Bengal, *46:* 267. Sibsagar, Assam.
1877. *Crocidura* (*Pachyura*) *rubicunda* Anderson, *loc. cit.* 277. Paresnath Hill, east of Hazaribagh, Bihar, India. (Status *fide* Lindsay, 1929, 340.)
1879. *Crocidura andersoni* Trouessart, Rev. Zool. Paris, 253. Khasi Hills, Assam.
(?) 1881. *Sorex beddomei* Anderson, Cat. Mamm. Ind. Mus. 179. Kollegal Hills, Coimbatore district, Southern India.
(?) 1915. *Crocidura muschata* Hatori, Taiwan Igakukai Zasshi, Jan. Number. (*N.F.*) Formosa.

Range: Lindsay quoted *caeruleus* from Gwalior, Central Provinces, Nimar, Bihar and Orissa, India, and Ceylon; according to Chasen, Lindsay's *caeruleus* = *murinus*, which he quotes from Malay Peninsula, Anambas, Sumatra, Java, Bali, Borneo. G. Allen quotes it from the larger towns of Southern China, coastwise as far north as Fukien; Formosa, Hainan. Osgood recorded *Suncus caeruleus* from Annam, Indo-China. Kuroda quotes the form *sacinhoei* from Formosa.

SUNCUS MURINUS CAERULESCENS Shaw, 1800

1796. *Sorex pilorides* Shaw, Mus. Lever, *2:* 31. Not of Pallas, 1779, which is indeterminable.
1800. *Sorex caerulescens* Shaw, Gen. Zool. Mamm. *1:* 533. India (? Bengal).
1831. *Sorex giganteus* Geoffroy, Voy. Bélanger Indes Orient. Zool. 117. Bengal.

Range: Darbhanga district, east of Nepal, and Midnapore district, India.

SUNCUS MURINUS SACER Ehrenberg, 1833

1833. *Suncus sacer* Ehrenberg, in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* folio k. Suez, Egypt.
1834. *Sorex crassicaudus* Hemprich & Ehrenberg, in Lichtenstein's Darstellung Saugeth, pl. 40, fig. 1, and text thereto. Neighbourhood of Suez, Egypt.
1868. *Pachyura duvernoyi* Fitzinger, S.B. Akad. Wiss. Wien, 136. Egypt.
(?) 1935. *Suncus tristrami* Bodenheimer, Animal Life in Palestine, 95. Palestine.

SUNCUS MURINUS SOCCATUS Hodgson, 1845

1845. *Sorex soccatus* Hodgson, Ann. Mag. N.H. *15:* 270. Central region of Nepal.
1855. *Sorex heterodon* Blyth, J. Asiat. Soc. Bengal, *24:* 31. Cherrapunji, in Khasi Hills, Assam.

SUNCUS MURINUS MONTANUS Kelaart, 1850

1850. *Sorex montanus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 211. Pidurutalagala, Mt. Nuwara Eliya, Ceylon.
1852. *Sorex fumigatus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 212. Dimbula, Nuwara Eliya, Ceylon.
(?) 1855. *Sorex kelaarti* Blyth, J. Asiat. Soc. Bengal, *24:* 32. Galle, Ceylon. Based on a young specimen of *montanus* according to Phillips (1935, Mamm. Ceylon).

Suncus murinus griffithi Horsfield, 1851

1851. *Sorex griffithi* Horsfield, Cat. Mamm. Mus. E. India Co. 134. The label of the type has "Afghanistan", but this has been crossed out and "Silket" substituted. See Lindsay (1929) on the suggestion that the type came from Assam.

1877. *Crocidura (Pachyura) blythii* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 264. Assam.

Suncus murinus niger Horsfield, 1851

1851. *Sorex niger* Horsfield, Cat. Mamm. Mus. E. India Co. 135. Madras, India. (Elliot in MS.)

Suncus murinus kandianus Kelaart, 1852

1852. *Sorex kandianus* Kelaart, Prodr. Faun. Zeyl. 30. Ceylon.

1870. *Crocidura (Pachyura) ceylanica* Peters, Mber. Preuss. Akad. Wiss. 591. Paradenia, Ceylon.

Suncus murinus saturatior Hodgson, 1855

1855. *Sorex saturatior* Hodgson, Ann. Mag. N.H. *16:* 110. Gangtok, Sikkim.

Suncus murinus viridescens Blyth, 1859

1859. *Sorex viridescens* Blyth, J. Asiat. Soc. Bengal, *28:* 285. Southern Malabar, India. Range: Madura and Trivandrum, Southern India.

Suncus murinus tytleri Blyth, 1859

1859. *Sorex tytleri* Blyth, J. Asiat. Soc. Bengal, *28:* 285. Dehra Dun, Northern India. Range: Kumaon, Punjab, Kashmir.

Suncus murinus fulvocinereus Anderson, 1877

1877. *Crocidura (Pachyura) fulvocinerea* Anderson, J. Asiat. Soc. Bengal, *46:* 263. Gauhati, Assam. Range: North Kamrup and Valley of Assam.

Suncus murinus sindensis Anderson, 1877

1877. *Crocidura (Pachyura) sindensis* Anderson, J. Asiat. Soc. Bengal, *46:* 266. Karachi, Sind, India. Range includes Kathiawar, Rajputana and Cutch, India.

Suncus murinus blanfordi Anderson, 1877

1877. *Crocidura (Pachyura) blanfordii* Anderson, J. Asiat. Soc. Bengal, *46:* 269. Khandalla, Western Ghats, 2,000 ft., India. Range includes Deccan area.

Suncus murinus riukiuana Kuroda, 1924

1924. *Pachyura caerulea riukiuana* Kuroda, On New Mamm. from Riukiu Islands, Tokyo, 3. Kinmu Kunchan, Okinawa, 200 ft., Liukiu Islands. Introduced Kiushiu, Japan.

Suncus murinus zeylanicus Phillips, 1928

1928. *Suncus zeylanicus* Phillips, Spolia Zeylan, *14:* 313. Gonagamma Estate, Kitulgala, 900 ft., Ceylon.

SUNCUS MURINUS MALABARICUS Lindsay, 1929

1929. *Suncus niger malabaricus* Lindsay, J. Bombay N.H. Soc. *33:* 334. No. 2437 from Virajpet, South Coorg, India, the only specimen to be mentioned by number, is assumed to be the holotype. Range: Coorg and Cochin, Southern India.

Suncus etruscus Savi, 1822 Savi's Pygmy Shrew

Approximate distribution of species: Southern Europe (Italy, Sicily, Sardinia, France, Spain, Greece, Hungary, etc.). Caucasus and Southern Russian Turkestan; Persia and Palestine (B.M.); recorded also from Algeria and Northern Nigeria (and quoted by Bobrinskii from Arabia and Iraq). As here understood, also Ceylon, Peninsular India, north to Punjab, and Orissa, Sikkim, Assam and Tenasserim. A closely allied form (or representative) occurs in the Malay States, and perhaps the species is represented also in East and South Africa.

SUNCUS ETRUSCUS ETRUSCUS Savi, 1822

1822. *Sorex etruscus* Savi, Nuovo Giorn. de Letterati, Pisa, *1:* 60. Pisa, Italy.
1835. *Sorex pachyurus* Kuster, Isis (Oken), 77. Cagliari, Sardinia.
1837. *Crocidura suaveolens* Blasius, Saugeth. Deutschlands, 147. Not of Pallas, 1811.

Range: European range of the species; Persia, Turkestan, Palestine; Algeria and Nigeria (see Morrison-Scott, 1948, Mammalia, *10:* 145).

SUNCUS ETRUSCUS PERROTTETI Duvernoy, 1842

1842. *Sorex perrotteti* Duvernoy, Mag. Zool. Paris, 29. Nilgiri Hills, Southern India.
(?) 1855. *Sorex hodgsoni* Blyth, J. Asiat. Soc. Bengal, *24:* 34. Darjeeling.
1877. *Crocidura (Pachyura) nilagirica* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 274. Ootacamund, Nilgiri Hills, Southern India.
1877. *Crocidura (Pachyura) travancorensis* Anderson, *loc. cit.* 275. Travancore, India.

Range: Nilgiri Hills, Coorg, Bellary, etc., in Southern India.

SUNCUS ETRUSCUS MICRONYX Blyth, 1855

1855. *Sorex micronyx* Blyth, J. Asiat. Soc. Bengal, *24:* 33. Landour, in Dehra Dun district, United Provinces, Northern India. Range: Kumaon and probably Kangra, Punjab.

SUNCUS ETRUSCUS NUDIPES Blyth, 1855

1855. *Sorex nudipes* Blyth, J. Asiat. Soc. Bengal, *24:* 34. Amherst, Tenasserim.
? 1855. *Sorex atratus* Blyth, J. Asiat. Soc. Bengal, *24:* 34. Cherrapunji, Khasi Hills, Assam.
? 1873. *Pachyura assamensis* Anderson, P.Z.S. 234. Goalparoh, on Brahmaputra.
? 1877. *Crocidura (Pachyura) macrotis* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 271. Tenasserim.

Range includes Jaintia Hills, Assam and Shan States, Burma.

Suncus etruscus nitidofulvus Anderson, 1877

1877. *Crocidura* (*Pachyura*) *nitidofulva* Anderson, J. Asiat. Soc. Bengal, *46:* 272. Lower Bengal, India.

1855. *Sorex melanodon* Blyth, J. Asiat. Soc. Bengal, *24:* 33. Not of Wagler, 1832.

Range: Chaibassa, Orissa, India.

Suncus etruscus pygmaeoides Anderson, 1877

1877. *Crocidura* (*Pachyura*) *pygmaeoides* Anderson, J. Asiat. Soc. Bengal, *46:* 279. Himalayas.

1845. *Sorex pygmaeus* Hodgson, Ann. Mag. N.H. *15:* 269. Not of Laxmann, 1769.

1867. *Sorex hodgsoni* Jerdon, Mamm. 57. Not of Blyth, 1855, which is a synonym of *perrotteti* according to Lindsay, 1929.

Range: Darjeeling district, North-Eastern India.

Suncus etruscus fellowesgordoni Phillips, 1932

1932. *Suncus fellowes-gordoni* Phillips, Spolia Zeylan, *17:* 124. West Haputale, Ohiya, Central Province, Ceylon.

Suncus stoliczkanus Anderson, 1877 Anderson's Shrew

Approximate distribution of species: India—Bombay, Central Provinces, Gwalior district, Rajputana, Kathiawar, Sind and Punjab.

Suncus stoliczkanus stoliczkanus Anderson, 1877

1877. *Crocidura* (*Pachyura*) *stoliczkana* Anderson, J. Asiat. Soc. Bengal, *46:* 270. Bombay, India.

1877. *Crocidura* (*Pachyura*) *bidiana* Anderson, *loc. cit.* 276. Madras, India.

Range includes Gwalior, Salsette Island, Nimar and Hoshangabad, India.

Suncus stoliczkanus subfulvus Anderson, 1877

1877. *Crocidura* (*Pachyura*) *subfulva* Anderson, J. Asiat. Soc. Bengal, *46:* 278. Cutch, India. Range includes Kathiawar and Sind.

Suncus stoliczkanus leucogenys Dobson, 1888

1888. *Crocidura leucogenys* Dobson, Ann. Mag. N.H. *1:* 428. Ajmere (Rajputana district), India.

Suncus dayi Dobson, 1888 Day's Shrew

Approximate distribution of species: Southern Peninsular India.

Suncus dayi Dobson, 1888

1888. *Crocidura dayi* Dobson, Ann. Mag. N.H. *1:* 428. Trichur, Cochin, India. (See Blanford, 1891, Fauna Brit. India, Mamm. 602.) Range includes Palni Hills, Southern India.

Genus **CROCIDURA** Wagler, 1832

1832. *Crocidura* Wagler, Isis, 275. (March, 1832.) *Sorex leucodon* Hermann.
1869. *Leucodon* Fatio, Faune Vert. Suisse, *1:* 132. Substitute for *Crocidura*.
1897. *Paurodus* Schulze, Helios, Berlin, *14:* 90. *Sorex araneus* Schreber (not of Linnaeus) = *Sorex russulus* Hermann, and *Sorex leucodon* Hermann .
1910. *Heliosorex* Heller, Smith's Misc. Coll. *56*, 15: 6. *Heliosorex roosevelti* Heller, from East Africa.

Of all genera in the class Mammalia, *Crocidura* must have been the largest collector of specific names. G. Allen has listed about 110 supposed species from Africa alone; we had on our preliminary lists 44 forms described binominally from the Palaearctic and Indian region; Chasen lists 29 more from the Malaysian region, and there are at least another 15 named from Celebes, the Philippines, Timor, etc.

We have come to the conclusion that there are about 14 valid species in the region at present under discussion. It may be noted that Miller (1912) recognized three species occurring together in much of Western Europe (*russula*, *leucodon* and *mimula* = *suaveolens*), and a fourth group of species, for which the prior name is *caudata*, from the Mediterranean islands. Bobrinskii (1944) recognizes four species from the U.S.S.R. *leucodon*, *russula*, *suaveolens* and *lasiura*). G. Allen (1938) retained five species in China. His *ilensis* is the same as *suaveolens;* his two large species *attenuata* and *dracula* seem valid, although it is possible that *dracula* is not the prior name for the second large species, and his other two forms seem to be outlying races of *russula*.

14 species in the area covered by this list:

Crocidura attenuata, page 83
Crocidura caudata, page 82
Crocidura dracula, page 84
Crocidura floweri, page 75
Crocidura hispida, page 75
Crocidura horsfieldi, page 75
Crocidura lasiura, page 84
Crocidura leucodon, page 82
Crocidura miya, page 75
Crocidura olivieri, page 85
Crocidura pergrisea, page 83
Crocidura religiosa, page 75
Crocidura russula, page 78
Crocidura suaveolens, page 76

Three species in the above list of names have the tail longer than the head and body. This is a rare character in this genus. *C. hispida*, from the Andaman Islands, is a very large species (skull length about 27.7 mm.) known by one specimen, which has the tail about 120 per cent. of the head and body. The elongated bristles on the tail which are characteristic of this genus and of *Suncus*, but which are not invariably present in *Crocidura*, are well developed. *C. miya* is a smaller species from Ceylon (skull length roughly 20 mm.), with the tail about 111 per cent. of the head and body.

The caudal bristles are very reduced, but a few are traceable. *C. floweri*, from Egypt, is the third long-tailed species in the present region. The tail bristles seem absent in the specimens examined. Mr. R. W. Hayman has remeasured the series on which the species was based, all of which are in spirit, and has obtained the following results:

	Head and body (mm.)	Tail (mm.)	Hindfoot (mm.)	Ear (mm.)
	52	53	11	8
	47	54	10.5	8
	51	57	13	8
(Type)	54	60	13	8

The condylobasal length varies between 17.8 and 19.2 mm., and the tail averages 109 per cent. of the head and body.

All other species here dealt with have the tail shorter than the head and body. The only specimens examined in which it approaches this length are six skins labelled *C. attenuata*, from Upper Burma, which give an average of 98 per cent.

There are three very small short-tailed species in the present region, in which the condylobasal length of the skull is not known to reach 18 mm. *C. religiosa* is an extremely small species from Egypt, in which the hindfoot is normally less than 10 mm., the head and body length 45–55 mm., the tail relatively long (over 70 per cent. of the head and body), and the condylobasal about 15.9–16.1 mm. (B.M. specimens). In the Indomalayan region is a species which differs from *religiosa* by slightly larger average size (hindfoot not below 10 mm., head and body most often more than 55 mm.). The caudal bristles in the specimens examined are traceable, though weak. The tail is long, more than 70 per cent. of the head and body. Shrews of this type have been examined from Ceylon (*horsfieldi*), Indo-China (*indochinensis*) and Liukiu Islands (*watasei*). No characters which will distinguish these three forms specifically have been discovered, and *horsfieldi* is the prior name. According to its description, the form *tadae* appears to belong here. In this form the head and body can be as small as 50 mm. but the foot is at least 11½ mm., thereby differing from *religiosa*. Sixty-one millimetres is the highest measurement which has been noted for head and body length of *horsfieldi* and allies, and the tail can exceed 80 per cent. of the head and body.

The widely distributed northern species, *C. suaveolens*, differs from *horsfieldi* and *religiosa* by its shorter tail, which is normally under 70 per cent. of head and body. The body length is approximately 55–75 mm., the tail percentage 43–63 per cent. in Europe, up to 67 per cent. in China. The only species from the British Islands (*cassiteridum* from the Scilly Isles) belongs here, and it is probable from descriptions that *lignicolor* may be a race (its skull is not fully known). *C. suaveolens* is represented in Palestine by *portali* and in North-West Africa by *whitakeri*. Two forms named recently by Goodwin from Persia may also be representatives of this species. In the remainder of the species, long series show condylobasal lengths of not under 18 mm. (with one individual exception). *C. olivieri* from Egypt stands apart from all the other short-tailed species in its unusually large size (condylobasal length 26.9–28.5 mm., B.M. material). This species looks like *Suncus murinus*, but has the dentition

characteristic of *Crocidura*. It has short fur, the body length is 93–110 mm., the tail (which averages below 70 per cent. of head and body) is 63–70 mm. The *Crocidura olivieri* group (giant species) is common virtually throughout Africa, but absent in Asia. The remainder have the condylobasal length normally between 18 and 25 mm.

There seem to be about seven species definable in the *russula* group, medium-sized species with the tail shorter than the head and body, but the differences are average rather than absolute. *C. russula* and *C. leucodon* are the earliest-named forms of this genus, both date from 1780, and *russula* has line priority. These two species occur together, and differ from each other in some colour details (see Miller, 1912). In these species as here defined, the condylobasal length of the skull rarely reaches 20 mm. For instance, in Miller's measurements, only two specimens of *leucodon* out of 33 noted are as much as 20 mm., and in *russula* 12 out of about 79 specimens reach 20 mm. In the Turkish *C. r. monacha*, one in six reaches 20 mm. (B.M.). Two little-known forms which were named as races of *russula*, *C. r. caspica* from Persia and *C. r. judaica* from Palestine have the condylobasal length 21 mm. in the type skulls, and very likely represent *C. lasiura*, but before transferring them to that species more specimens will be needed. Bobrinskii has transferred the form *C. leucodon lasia* to *C. lasiura* as a subspecies, and this seems necessary, as 12 duplicates for *lasia* have the condylobasal length 20–23 mm., which is the normal size for *lasiura*. Miller's measurements for *C. leucodon* have the head and body 63–87 mm., the tail averaging about 39–54 per cent. of it; and for *russula* head and body 64–95 mm., tail averaging 43–58 per cent. of it. There are other races in which the tail averages over 60 per cent. of head and body. These include *C. russula cypria* from Cyprus and *C. r. caneae* from Crete; also *C. dsinezumi* and allied forms from Japan, to which the forms *vorax* and *rapax*, described by G. Allen, from Yunnan, bear a close resemblance. As no characters have been found to separate the Mediterranean island forms *cypria* and *caneae* from the Japanese *dsinezumi*, the conclusion has been reached that it is wiser to call all these forms further outlying races of *russula*. The condylobasal length of 10 specimens of *dsinezumi* in the B.M. varies between 18 and 19.4 mm., about the same size as published measurements for *caneae* and *cypria*. Outlying forms, which apparently represent *C. russula*, are *pullata* from Kashmir and possibly *sodyi* from Korea.

None of the forms just listed have the tail as much as 70 per cent. of the head and body, which is characteristic of two species here retained, *C. caudata* (Mediterranean islands), and *C. pergrisea* (Kashmir and Baluchistan) (we have not seen *pergrisea*, but from descriptions it is very like the Baluchistan form, *zarudnyi*, which it antedates). These species have the condylobasal length of the skull approximately 18–19.4 mm. (18–18.8 mm. in forms represented in London). The tail averages about 70–82 per cent., usually more than 70 per cent. of the head and body. A few specimens representing *caudata* subspecies and *zarudnyi* in the B.M. indicate that the two species can be maintained on colour: *zarudnyi* is conspicuously paler both below and above; and *pergrisea* was described as very pale grey, below creamy white. The remaining forms in Asia are rather larger than *russula*, *leucodon*, *caudata* and *pergrisea*, although the difference is an average one, the condylobasal length of the skull averaging at least

20 mm. in each of the races. *C. lasiura*, from Manchuria, Ussuri, Asia Minor and the Caucasus, is a short-tailed species, with the tail fairly well haired; the condylobasal length in 24 specimens (*lasiura*, *lasia*) varies between 20 mm. and 22.6 mm., and the tail is relatively short, roughly 42–51 per cent. of the head and body length. In the form *yamashinai* (not represented in London, but here tentatively regarded as a race), the skull length is 23.5–25 mm., but smaller specimens seem covered by larger specimens of *lasiura*. (Kuroda gives measurements of 21–24 mm. for *lasiura*.) The body length is 73–98 mm. in more typical forms, but can be as much as 112 mm. in larger specimens of *yamashinai*. Two species, which are mostly Indomalayan in distribution, have the large skull of *lasiura* but differ in having the tail at least 60 per cent., usually over 70 per cent. of head and body. (Allen's measurements for *attenuata* have the tail averaging about 64 per cent., but most of our specimens are over 70 per cent.) Two named races of *dracula* have the tail 60 per cent. in the types, but it is more usual for the tail to exceed or approximate 80 per cent. in this species. The two species occur together, and the prior names seem to be *attenuata* and *dracula*. The Himalayan forms, *rubricosa* and *kingiana*, seem to represent *attenuata*. Twelve skulls of *attenuata* (B.M.) have the condylobasal length 19.8–22.1 mm., but only once under 20 mm. All G. Allen's specimens exceed 20 mm. Twelve specimens in the B.M. representing *rubricosa* and *kingiana* have the condylobasal length 19.3–23.9 mm., but only once over 22 mm. and twice under 20 mm. From descriptions, the Formosan form *tanakae* should represent *attenuata*.

The second large species in Southern China and Northern Burma is *C. dracula*, unless this represents one of the numerous earlier-named forms from the Malaysian region. Where it occurs with *attenuata* it is larger on average. The type of the race *grisescens* has the greatest length of skull only 21.6 mm. and possibly does not represent the species; otherwise no specimen with the skull length less than 22 mm. has been noted. The body length is about 84–105 mm., and the largest skulls are about 24.3 mm. in length. All species dealt with above have the caudal bristle hairs at least perceptible, except apparently *floweri*. Of the specimens seen, they were noted as being most reduced in *rubricosa*, *horsfieldi* and *miya*.

These results, which must be regarded as provisional, can be arranged in key form, as follows:

1. Tail clearly exceeds length of head and body. ——2
   Tail shorter than head and body. ——4

2. Length of skull 27.7 mm. Tail more than 120 per cent. of head and body. (Type in B.M.) *CROCIDURA HISPIDA*
   Length of skull about 20.5 mm, and less. Tail 109–111 per cent. of head and body. ——3

3. Bristles on tail barely perceptible. Length of skull about 17.8–19.2 mm. Head and body 54 mm., and less. (Type in B.M.) *CROCIDURA FLOWERI*
   Bristles on tail perceptible. Skull length approximately 20.5 mm. Head and body 79 mm. (type specimen, B.M.) *CROCIDURA MIYA*

4. Small; condylobasal length of skull less than 18 mm. ——5
Larger; condylobasal length of skull normally at least 18 mm. ——7

5. Tail shorter, averaging less than 70 per cent. of head and body.
CROCIDURA SUAVEOLENS
Forms examined: *whitakeri*, *mimula*, *ilensis*, *coreae* = *shantungensis*, *portali*, *cassiteridum*.
Tail longer, averaging over 70 per cent. of head and body. ——6

6. Hindfoot normally 8½–9 mm. (Egypt).
CROCIDURA RELIGIOSA (Several specimens available for examination)
Hindfoot 10 mm., and more (Indomalayan). *CROCIDURA HORSFIELDI*
Forms examined: *horsfieldi*, *indochinensis*, *watasei*.

7. Very large species, condylobasal length 26.9–28.5 mm. (Fur short; appearance reminiscent of a house-dwelling form.)
CROCIDURA OLIVIERI (Several specimens available for examination)
Smaller species; length of skull not known to exceed 25 mm. ——8

8. In the majority of specimens, the skull is less than 20 mm. in length. ——9
In the majority of specimens, the skull is at least 20 mm. in length. ——12

9. Tail long, averages at least 70 per cent. of head and body length. ——10
Tail shorter, averages less than 70 per cent. of head and body length. ——11

10. Colour paler above and below.
CROCIDURA PERGRISEA (Kashmir, Baluchistan)
Form examined: *zarudnyi*.
Colour darker above and below.
CROCIDURA CAUDATA (Western Mediterranean)
Forms examined: *balearica*, *cyrnensis*.

11. Division of colour between light underparts and dark back generally more marked. *CROCIDURA LEUCODON*
Forms examined: *leucodon*, *sicula*, *persica*.
Division of colour between underparts and back usually less abrupt. (The differences between these two species, which occur together, are not very strongly marked.) *CROCIDURA RUSSULA*
Forms examined: *russula*, *dsinezumi*, *umbrina*, *cypria*, *monacha*, *chisai*, *caspica*, *cintrae*, *pulchra*, *caneae*, *judaica*, *peta*, *sodyi*. The forms *judaica* and *caspica* seem based on one specimen each with a skull too large for *russula*, and further material may show them to be representatives of *C. lasiura*.

12. Tail relatively short, approximating half head and body length, or less.
CROCIDURA LASIURA
Forms examined: *lasiura*, *lasia*, *thomasi*.
Tail long, rarely as low as 60 per cent., mostly exceeding 70 per cent. of head and body. ——13

13. In the majority of specimens the length of the skull is less than 22 mm.
CROCIDURA ATTENUATA

Forms examined: *attenuata*, *rubricosa*, *kingiana*.

In the majority of specimens the length of the skull is 22 mm., and more.
CROCIDURA DRACULA

Forms examined: *dracula*, *praedax* = *dracula*.

Crocidura hispida group. (Very long-tailed species.)

Crocidura hispida Thomas, 1913 Andaman Island Spiny Shrew

Approximate distribution of species: Middle Andaman Island, Bay of Bengal.

CROCIDURA HISPIDA Thomas, 1913

1913. *Crocidura hispida* Thomas, Ann. Mag. N.H. *11:* 468. Northern end Middle Andaman Island, Andaman Islands.

Crocidura floweri Dollman, 1915 Flower's Shrew

Approximate distribution of species: Egypt.

CROCIDURA FLOWERI Dollman, 1915

1915. *Crocidura floweri* Dollman, Ann. Mag. N.H. *15:* 515. Gizeh, Egypt. See also 1916, Ann. Mag. N.H. *17:* 192.

Crocidura miya Phillips, 1929 Ceylon Long-tailed Shrew

Approximate distribution of species: Ceylon.

CROCIDURA MIYA Phillips, 1929

1929. *Crocidura miya* Phillips, Spolia Zeylan. *15:* 113. Moolgama, village in the Nilambe district of Kandyan Hills, about 3,000 ft., Ceylon.

Crocidura suaveolens group. (Pygmy species.)

Crocidura religiosa Geoffroy, 1827 Egyptian Pygmy Shrew

Approximate distribution of species: Egypt. Probably also represented in Somaliland, Uganda, Sudan, under the names *nana*, *nanilla*, *pasha*.

CROCIDURA RELIGIOSA Geoffroy, 1827

1827. *Sorex religiosus* I. Geoffroy, Mém. Mus. H.N. Paris, *15:* 128. Types mummified, Thebes, Egypt.

Crocidura horsfieldi Tomes, 1856 Horsfield's Shrew

Approximate distribution of species: Ceylon, also apparently represented in Kashmir, Indo-China, Siam (Tate), Northern Burma and Liukiu Islands.

Crocidura horsfieldi horsfieldi Tomes, 1856

1856. *Sorex horsfieldii* Tomes, Ann. Mag. N.H. *17:* 23. Ceylon.

1870. *Crocidura retusa* Peters, Mber. Preuss. Akad. Wiss. 585. Paradenia, Ceylon.

Crocidura (?) horsfieldi myoides Blanford, 1875

1875. *Sorex (Crocidura) myoides* Blanford, J. Asiat. Soc. Bengal, *44,* 2: 106. Leh, Ladak. From descriptions seems nearest to *horsfieldi.*

Crocidura horsfieldi indochinensis Robinson & Kloss, 1922

1922. *Crocidura indochinensis* Robinson & Kloss, Ann. Mag. N.H. *9:* 88. Dalat, Langbian Plateau, 5,000 ft., Annam, Indo-China. Range includes Northern Burma; and Siam, according to Tate.

Crocidura horsfieldi watasei Kuroda, 1924

1924. *Crocidura watasei* Kuroda, New Mamm. from Riukiu Islands, Tokyo, 1. Komi, Amamioshima, Liukiu Islands.

Crocidura horsfieldi tadae Tokuda & Kano, 1936

1936. *Crocidura tadae* Tokuda & Kano, Annot. Zool. Jap. *15:* 429. Kotô-shô = Island of Botel Tobago (east of Formosa).

Crocidura suaveolens Pallas, 1811 Lesser White-toothed Shrew

Approximate distribution of species: Germany, southwards to Yugoslavia, Bulgaria and Greece; France, Switzerland, south to Italy and Sardinia; Spain; represented in the Scilly Islands; Central and Southern Russia (north to southern districts of Moscow Province), Estonia; Russian Turkestan, and Ussuri district of Eastern Siberia; Sinkiang, Mongolia, Korea, most of the larger states of China from Shantung and Chekiang, westwards to Szechuan; Persia, Palestine; Morocco and Algeria. Probably also ranges in East and South-West Africa under the name *bicolor.*

Crocidura suaveolens suaveolens Pallas, 1811

1811. *Sorex suaveolens* Pallas, Zoogr. Ross. As. *1:* 133, pl. 9, fig. 2. Khersones, Crimea, Southern Russia.

(?) 1934. *Crocidura suaveolens mordeni* Goodwin, Amer. Mus. Nov. No. 742: 1. Tuz Bulak, 50 miles north of Kizil Orda (Perovsk), Kazakstan, 600 ft., Russian Central Asia.

Range: Lowlands of Russia and Russian Central Asia.

Crocidura suaveolens whitakeri de Winton, 1898

1898. *Crocidura whitakeri* de Winton, P.Z.S. *1897:* 954. Sierzet, half-way between Morocco City and Mogador, Morocco.

Crocidura suaveolens lignicolor Miller, 1900

1900. *Crocidura lignicolor* Miller, Proc. Washington Acad. Sci. *2:* 39. Jungle east of Maralbashi, near Yarkand River, Chinese Turkestan. The skull of this form seems not fully known, but the external measurements suggest a small form of the present species.

CROCIDURA SUAVEOLENS MIMULA Miller, 1901

1901. *Crocidura mimula* Miller, Proc. Biol. Soc. Washington, *14:* 95. June, 1901. Züberwangen, St. Gallen, Switzerland.

(?) 1839. *Crocidura aranea* var. *minor* de Sélys Longchamps, Études de Micromamm. 35. Silesia.

1901. *Crocidura antipae* Matschie, S.B. Ges. Naturf. Fr. Berlin, 228. November, 1901. Siulnita and Barza, Rumania.

1902. *Crocidura minuta* Lydekker, Zool. Record, *1901,* Mamm.: 27. Accidental renaming of *mimula.*

1921. *Crocidura dinnicki* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. 340. Stavropol, Northern Caucasus. (Status *fide* Bobrinskii.)

Range: France, Germany, Bohemia, Transylvania, Yugoslavia, Rumania, Bulgaria, Switzerland, Italy, Greece, Caucasus.

CROCIDURA SUAVEOLENS ILENSIS Miller, 1901

1901. *Crocidura ilensis* Miller, Proc. Biol. Soc. Washington, *14:* 157. Kukturuk, Ili, 5,400 ft., extreme Western Chinese Turkestan. Ranges to Mongolia. Bobrinskii thinks this is probably a synonym of *suaveolens.*

CROCIDURA SUAVEOLENS SHANTUNGENSIS Miller, 1901

1901. *Crocidura shantungensis* Miller, Proc. Biol. Soc. Washington, *14:* 158. Chimeh, Shantung, China.

1907. *Crocidura coreae* Thomas, P.Z.S. *1906:* 860. Mingyong, 110 miles south-east of Seoul, Korea.

1927. *Crocidura longicauda* Mori, J. Chosen N.H. Soc. *5:* 28. Seoul, Korea.

Range: Korea, Shansi, Shensi, Shantung, Chekiang, in China; Tsushima I.

CROCIDURA SUAVEOLENS ICULISMA Mottaz, 1908

1908. *Crocidura mimula iculisma* Mottaz, Bull. Soc. Zool. Genève, *1:* 119. Lignières-Sonneville, Charente, France.

CROCIDURA SUAVEOLENS CANTABRA Cabrera, 1908

1908. *Crocidura cantabra* Cabrera, Bol. Soc. Esp. H.N. *8:* 239. Basque Provinces, Spain (exact locality unknown).

CROCIDURA SUAVEOLENS ITALICA Cavazza, 1912

1912. *Crocidura mimula italica* Cavazza, Boll. Mus. Zool. Anat. Comp. Torino, *27,* 653: 12. Della Valle Padana, Italy.

CROCIDURA SUAVEOLENS SARDA Cavazza, 1912

1912. *Crocidura sicula* var. *sarda* Cavazza, Boll. Mus. Zool. Anat. Comp. Torino, *27,* 659: 7. Cagliari, Sardinia.

CROCIDURA SUAVEOLENS PORTALI Thomas, 1920

1920. *Crocidura portali* Thomas, Ann. Mag. N.H. *5:* 119. Ramleh, south-east of Jaffa, Palestine.

CROCIDURA SUAVEOLENS ORIENTIS Ognev, 1921

1921. *Crocidura suaveolens orientis* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 341. Nebilmi, valley of River Tuman-gan, Ussuri region of Eastern Siberia.

CROCIDURA SUAVEOLENS PHAEOPUS G. Allen, 1923

1923. *Crocidura ilensis phaeopus* G. Allen, Amer. Mus. Nov. No. 100, 7. Wanhsien, Szechuan, China. Range includes Hupeh and Southern Shensi, China.

CROCIDURA SUAVEOLENS CASSITERIDUM Hinton, 1924

1924. *Crocidura cassiteridum* Hinton, Ann. Mag. N.H. *14:* 509. An uninhabited island, Scilly Islands (off Cornwall, England).

CROCIDURA SUAVEOLENS DEBEAUXI Dal Piaz, 1925

1925. *Crocidura mimula debeauxi* Dal Piaz, Atti Soc. Ven.-Trent. Sci. Nat. *16* (sep. pag). Frugarolo, Prov. de Allessandria, Northern Italy.

CROCIDURA SUAVEOLENS LAR G. Allen, 1928

1928. *Crocidura lar* G. Allen, Amer. Mus. Nov. No. 317: 1. Tsagan Nor, Central Gobi, Mongolia.

CROCIDURA (?) SUAVEOLENS HYRCANIA Goodwin, 1940

1940. *Crocidura hyrcania* Goodwin, Amer. Mus. Nov. No. 1082: 1. Turkman plains, about 60 km. north-east of Astrabad, on banks of the Gurgan River, sea level, Persia.

CROCIDURA (?) SUAVEOLENS ASTRABADENSIS Goodwin, 1940

1940. *Crocidura astrabadensis* Goodwin, Amer. Mus. Nov. No. 1082: 3. Dar Kaleh, about 40 km. east of Astrabad, sea level, Persia.

CROCIDURA (?) SUAVEOLENS OYAENSIS Heim de Balsac, 1940

1940. *Crocidura oyaensis* Heim de Balsac, C.R. Acad. Sci. Paris, *211:* 296. Yeu Island, off Vendée, Western France.

Crocidura russula group. (Medium-sized species.)

Crocidura russula Hermann, 1780 Common European White-toothed Shrew

Approximate distribution of species: France, Channel Islands, Sardinia, Corsica, Switzerland, Italy, Spain, Portugal, Belgium, Holland, Germany, Poland, Crete; Caucasus and Southern Russian Turkestan, east to Pamir Mountains; Asia Minor, Persia, Palestine, Afghanistan (B.M. specimens collected by Chaworth-Musters identified as this species); Kashmir; Japan; Yunnan, China; ? Korea; Morocco, Algeria, Tunis. Probably also represented in Kenya, Sudan, Angola, etc.

CROCIDURA RUSSULA RUSSULA Hermann, 1780

1780. *Sorex russulus* Hermann, in Zimmermann, Geogr. Gesch. *2:* 382. Near Strasbourg, Bas-Rhin, Eastern France.

1778. *Sorex araneus* Schreber, Säugeth. *3:* 573. Not of Linnaeus, 1758.
(?) 1780. *Sorex constrictus* Hermann, in Zimmermann, Geogr. Gesch. *2:* 383. Near Strasbourg, France (based on young animal).
(?) 1792. *Sorex unicolor* Kerr, Anim. Kingd. 208. Strasbourg, France.
1798. *Sorex musaraneus* Cuvier, Tabl. Élém. H.N. des Anim. 109. France.
(?) 1800. *Sorex lcucurus* Shaw, Gen. Zool. *1*, 2: 538. Strasbourg, France.
1801. *Sorex araneus cinereus* Bechstein, Gemeinn. Nat. Deutschlands, *1*, 2nd ed.: 867 (misprinted 863). Thuringia, Germany.
1801. *Sorex araneus candidus* Bechstein, *loc. cit.* Thuringia, Germany.
1832. *Sorex fimbriatus* Wagler, Isis, 54. Bavaria, Germany.
1832. *Crocidura moschata* Wagler, Isis, 275. Substitute for *Sorex fimbriatus.*
1832. *Crocidura major* Wagler, Isis, 1218. Bavaria, Germany.
1832. *Crocidura rufa* Wagler, Isis, 1218. Banks of Rhine, Germany.
1832. *Crocidura poliogastra* Wagler, Isis, 1218. Banks of Rhine, Germany.
1832. *Sorex thoracicus* Savi, Nuovo Giorn. de Letterati, Pisa, *24:* 52. Near Pisa, Italy.
(?) 1839. *Sorex inodorus* de Sélys Longchamps, Études Micromamm. 34. Silesia.
(?) 1839. *Crocidura aranea* var. *albiventris* de Sélys Longchamps, *loc. cit.* No locality.
(?) 1839. *Sorex hydruntina* Costa, Fauna del Ragno di Napoli, Mamm. 6. Otranto, Calabria, Italy.
1855. *Sorex chrysothorax* Dehne, Allg. Deutsche Naturhist. Zeitung, *1:* 241. Wilsdurf, near Dresden, Germany.

Range: Holland, Belgium, France, Germany, Switzerland, Italy. Bobrinskii thinks the next is the same and includes Russia, Caucasus and Northern Persia in the range.

Crocidura russula güldenstaedti Pallas, 1811

1811. *Sorex güldenstaedtii* Pallas, Zoogr. Ross. Asiat. *1:* 132, pl. 9, fig. 1. Near Dushet, Georgia, Transcaucasia.
(?) 1863. *Sorex* (*Crocidura*) *fumigatus* de Filippi, Arch. Zool. Anat. Fisiol. Genova, *2:* 379. Tehran, Northern Persia. Range includes Simla, according to Blanford.
1889. *Crocidura longicaudata* Tichomirov & Kortchagin, Mém. Soc. Amis. Sci. Nat. Moscou, *56*, 4, 1: 17. Sukhum, Black Sea, Russia.
1889. *Sorex bogdanowii* Tichomirov & Kortchagin, *loc. cit.*
1914. *Crocidura russula aralychensis* Satunin, Mitt. Kaukas. Mus. *8:* 92. Marshy shores of River Karasu, near Aralych, Caucasus.

Crocidura russula dsinezumi Temminck, 1844

1844. *Sorex dsi-nezumi* Temminck, in Siebold, Faun. Japon. Mamm. 26. Kiushiu, Japan.
1844. *Sorex kinezumi* Temminck, *loc. cit.* 26 (footnote).
1845. (*Sorex*) *kinczumi* Temminck, in Siebold, Fauna Japon. Mamm. *4*, Tabl. iv, figs. 6-11c.

Range: Kiushiu, Shikoku, ? Oki Is.

crocidura russula umbrina Temminck, 1844

1844. *Sorex umbrinus* Temminck, in Siebold, Faun. Japon. Mamm. 27. Miyanoura, Yakushima, Japan (Kuroda).

CROCIDURA RUSSULA AGILIS Levaillant, 1867

1867. *Pachyura agilis* Levaillant, in Loche, Explor. Sci. de l'Algérie, Zool., pl. 4, fig. 2. Algeria. ("The atlas of this work was published many years before the text according to Cabrera." G. Allen (who dates the name from 1850).)

(?) 1856. *Sorex mauritanicus* Pomel, C.R. Acad. Sci. Paris, *42:* 653. Algeria. (*N.V.*)

1867. *Pachyura pigmaea* Loche, Explor. Sci. de l'Algérie, Zool. 88. Ain-el-Bel, Algeria.

Range: Morocco to Tunis.

CROCIDURA RUSSULA CYPRIA Bate, 1904

1904. *Crocidura russula cypria* Bate, P.Z.S. *1903,* 2: 344. Cyprus.

CROCIDURA RUSSULA MONACHA Thomas, 1906

1906. *Crocidura russula monacha* Thomas, Ann. Mag. N.H. *17:* 417. Scalita, near Trebizond, 700–1,000 m., Asia Minor.

CROCIDURA RUSSULA CHISAI Thomas, 1906

1906. *Crocidura dsi-nezumi chisai* Thomas, P.Z.S. *1905,* 2: 340. Tsunagi, near Morioka, Northern Hondo, Japan.

CROCIDURA RUSSULA CASPICA Thomas, 1907

1907. *Crocidura russula caspica* Thomas, Ann. Mag. N.H. *20:* 197. Southern coast of Caspian Sea, Northern Persia. It is possible that this little-known form represents *C. lasiura.*

CROCIDURA RUSSULA PULCHRA Cabrera, 1907

1907. *Crocidura russula pulchra* Cabrera, Ann. Mag. N.H. *20:* 213. Valencia, Spain. Range: Portugal (part); Spain (Central and Southern); lowlands of France, south of the Gironde.

CROCIDURA RUSSULA CINTRAE Miller, 1907

1907. *Crocidura russula cintrae* Miller, Ann. Mag. N.H. *20:* 390. Cintra, near Lisbon, Portugal.

CROCIDURA RUSSULA CANEAE Miller, 1909

1909. *Crocidura caneae* Miller, Ann. Mag. N.H. *3:* 418. Crete.

CROCIDURA RUSSULA PULLATA Miller, 1911

1911. *Crocidura pullata* Miller, Proc. Biol. Soc. Washington, *24:* 241. Kotihar, 7,000 ft., Kashmir.

CROCIDURA RUSSULA ICHNUSAE Festa, 1912

1912. *Crocidura ichnusae* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *27,* 648: 1. Piscina, Lanusei, Sardinia.

CROCIDURA RUSSULA MIMULOIDES Cavazza, 1912

1912. *Crocidura russula mimuloides* Cavazza, Boll. Mus. Zool. Anat. Comp. Torino, *27,* 653: 9. Buggiolo, Ticino Alps, Italy.

CROCIDURA RUSSULA YEBALENSIS Cabrera, 1913

1913. *Crocidura yebalensis* Cabrera, Bol. Soc. Esp. H.N. *13:* 400. Tetuan, Morocco.

CROCIDURA RUSSULA JUDAICA Thomas, 1919

1919. *Crocidura russula judaica* Thomas, Ann. Mag. N.H. *3:* 32. Near Jerusalem, Palestine. It is possible that this little-known form represents *C. lasiura.*

CROCIDURA RUSSULA PETA Montagu & Pickford, 1923

1923. *Crocidura russula peta* Montagu & Pickford, P.Z.S. 1044. Guernsey, Channel Islands.

CROCIDURA RUSSULA VORAX G. Allen, 1923

1923. *Crocidura vorax* G. Allen, Amer. Mus. Nov. No. 100: 8. Timber-line forest on Ssu Shan (Snow Mountain), Likiang Range, 12,000 ft., Yunnan, China.

CROCIDURA RUSSULA RAPAX G. Allen, 1923

1923. *Crocidura rapax* G. Allen, Amer. Mus. Nov. No. 100: 9. Yinpankai, Mekong River, 9,000 ft., Yunnan, China.

CROCIDURA RUSSULA INTERMEDIA Kuroda, 1924

1924. *Crocidura dsi-nezumi intermedia* Kuroda, New Mamm. from Riukiu Islands, Tokyo, 2. Nishino-omote, Tanegashima Island, 200–400 ft., Japan.

CROCIDURA RUSSULA ORII Kuroda, 1924

1924. *Crocidura dsi-nezumi orii* Kuroda, New Mamm. from Riukiu Islands, Tokyo, 3. Komi, Amamioshima, Liukiu Islands.

CROCIDURA RUSSULA PAMIRENSIS Ognev, 1928

1928. *Crocidura pamirensis* Ognev, Mamm. E. Europe, N. Asia, *1:* 366. Near Lake Drum, south slope Pamir Range, 12,000 ft., Russian Asia.

1929. *Crocidura serezkyensis* Laptev, Mater. Centr. Asiat. Zool. Gard. *1:* 16. (*N.V.*) Ognev, Mamm. E. Europe, N. Asia, *2:* 771. Lake Severskoe, Pamir Mountains.

CROCIDURA RUSSULA QUELPARTIS Kuroda, 1934

1934. *Crocidura dsi-nezumi quelpartis* Kuroda, J. Mamm. *15:* 236. Seikiho, Quelpart Island, off Korea.

CROCIDURA (?) RUSSULA SODYI Kuroda, 1935

1934. *Crocidura neglecta* Kuroda, J. Mamm. *15:* 238. Not of Jentink, 1888.

1935. *Crocidura sodyi* Kuroda, Zool. Mag. Tokyo, *47:* 327. To replace *neglecta* Kuroda, preoccupied. Bampo, Korea. (Size large, skull of type, 20 mm. But possibly represents *russula,* as it occurs with the much larger *C. lasiura yamashinai* which has the same type locality.)

CROCIDURA (?) RUSSULA CORSICANA Heim de Balsac & Reynaud, 1940

1940. *Crocidura corsicana* Heim de Balsac & Reynaud, Bull. Soc. Zool. France, *65:* 216. Francardo, Ile Rousse, Corsica.

CROCIDURA RUSSULA ANTHONYI Heim de Balsac, 1940

1940. *Crocidura anthonyi* Heim de Balsac, Bull. Mus. H.N. Paris, *12:* 382. Gafsa, Tunis.

CROCIDURA (?) RUSSULA FOUCAULDI Agacino, 1943

1943. *Crocidura foucauldi* Agacino, Bol. Soc. Esp. H.N. *41:* 37. Isaguen, 1,500 m., Beni Seddat, Rif, Spanish Morocco.

Crocidura leucodon Hermann, 1780 Bicolor White-toothed Shrew

Approximate distribution of species: Holland, Belgium, France, Germany, Poland, Switzerland, Italy, apparently represented in Sicily; Yugoslavia, Transylvania; Central and Southern Russia, including Crimea, Caucasus, Eastern Turkestan, and northwards to Central Siberia (Minussinsk steppe, Semipalatinsk province); Persia.

CROCIDURA LEUCODON LEUCODON Hermann, 1780

1780. *Sorex leucodon* Hermann, in Zimmermann, Geogr. Gesch. *2:* 382. Vicinity of Strasbourg, Bas Rhin, Eastern France.

1792. *Sorex albipes* Kerr, Anim. Kingd. 208.

1869. *Leucodon microurus* Fatio, Faune Vert. Suisse, *1:* 137. Substitute for *leucodon.*

1897. *Crocidura leucodus* Schulze, Helios, Berlin, *14:* 90. Substitute for *leucodon.*

Range: European and Russian range of the species, except Sicily.

CROCIDURA (?) LEUCODON SICULA Miller, 1901

1901. *Crocidura sicula* Miller, Proc. Biol. Soc. Washington, *14:* 41. Palermo, Sicily. (*Crocidura sicula* Giglioli, 1879, Arch. Naturgesch. *1:* 96, *nom. nud.*) Perhaps a form of *C. russula.*

CROCIDURA LEUCODON PERSICA Thomas, 1907

1907. *Crocidura leucodon persica* Thomas, Ann. Mag. N.H. *20:* 198. Elburz Mountains, near Demavend, 6,500 ft., Persia.

1908. *Crocidura leucodon caspica* Lydekker, Zool. Record, *1907,* Mamm.: 59. Accidental renaming of *C. l. persica.*

CROCIDURA LEUCODON NARENTAE Bolkay, 1925

1925. *Crocidura leucodon narentae* Bolkay, Novit. Mus. Sarajevo, *1:* 7. Between Capljna and the old Roman defensive castle, Mogorjelo, Herzegovina, Yugoslavia.

CROCIDURA LEUCODON SIBIRICA Dukelski, 1930

1930. *Crocidura leucodon sibirica* Dukelski, Zool. Anz. *88:* 75. Village of Osnatschennoje, on River Yenesei, 96 km. south of Minussinsk, Siberia. Bobrinskii calls this form *C. l. myoides* (Blanford), but *myoides* Blanford from description seems to be a form of *C. horsfieldii.* The present name is available for the Siberian race.

Crocidura caudata Miller, 1901 Mediterranean Long-tailed Shrew

Approximate distribution of species: Sicily, Corsica, Balearic Islands.

CROCIDURA CAUDATA CAUDATA Miller, 1901

1901. *Crocidura caudata* Miller, Proc. Biol. Soc. Washington, *14:* 42. Palermo, Sicily.

CROCIDURA CAUDATA CYRNENSIS Miller, 1907

1907. *Crocidura cyrnensis* Miller, Ann. Mag. N.H. *20:* 390. Bastia, Corsica.

CROCIDURA CAUDATA BALEARICA Miller, 1907

1907. *Crocidura balearica* Miller, Ann. Mag. N.H. *20:* 391. San Cristobal, Minorca, Balearic Islands.

Crocidura pergrisea Miller, 1913 Pale Grey Shrew

Approximate distribution of species: Kashmir, Baluchistan and Eastern Persia.

CROCIDURA PERGRISEA PERGRISEA Miller, 1913

1913. *Crocidura pergrisea* Miller, Proc. Biol. Soc. Washington, *26:* 113. Skoro Loomba, Shigar, Baltistan, 9,500 ft., Kashmir.

CROCIDURA PERGRISEA ZARUDNYI Ognev, 1928

1921. *Crocidura tatianae* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *22:* 338. Eastern Persia (Baluchistan). Not *C. tatiana* Dollman, 1915.

1928. *Crocidura zarudnyi* Ognev, Mamm. E. Europe, N. Asia, *1:* 341. New name for *tatianae* Ognev *nec* Dollman.

Specimens examined from Kelat and Turbat, Indian Baluchistan.

Crocidura attenuata Milne-Edwards, 1872 Grey Shrew

Approximate distribution of species: China, states of Kiangsu, Chekiang, Hupeh, Szechuan, Hunan, Fukien, Western Yunnan; Hainan, Northern Burma, Assam, Bhutan Duars, Sikkim, Kumaon, Punjab, Kashmir; apparently Formosa.

CROCIDURA ATTENUATA ATTENUATA Milne-Edwards, 1872

1872. *Crocidura attenuata* Milne-Edwards, Rech. H.N. Mamm. 263, pl. 38B, fig. 1, pl. 39A, fig. 2. Moupin, Szechuan, China.

1926. *Crocidura grisea* Howell, Proc. Biol. Soc. Washington, *39:* 137. Seventy-five miles south-west of Yenpingfu, 500 ft., Fukien, China.

Range: China, as listed above, and including Hainan; Northern Burma (B.M.)

CROCIDURA ATTENUATA RUBRICOSA Anderson, 1877

1877. *Crocidura rubricosa* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 280. Sibsagar, Assam. Specimens examined from Assam, Kamrup, Bhutan Duars, and Pashok, near Darjeeling.

CROCIDURA ATTENUATA KINGIANA Anderson, 1877

1877. *Crocidura kingiana* Anderson, J. Asiat. Soc. Bengal, *46*, 2: 281. Sikkim. Specimens examined from Kumaon and Punjab.

CROCIDURA (?) ATTENUATA TANAKAE Kuroda, 1938

1938. *Crocidura tanakae* Kuroda, Handlist Jap. Mamm. 81. Shohosha, Horigai, Taichusiu, Central Formosa.

Crocidura dracula Thomas, 1912 Dracula Shrew

Approximate distribution of species: Yunnan, Fukien, Northern Burma, Indo-China. The form *dracula* requires comparison with *C. baluensis* Thomas, 1898, Borneo (? = a race of *C. orientalis* Jentink, 1890, Java), and other earlier-named extralimital forms.

Crocidura dracula dracula Thomas, 1912

1912. *Crocidura dracula* Thomas, Ann. Mag. N.H. *9:* 686. Probably near Mongtze (Mengtsz), Southern Yunnan, China.

1923. *Crocidura praedax* Thomas, Ann. Mag. N.H. *11:* 656. Likiang Valley, Central Yunnan, 9,500 ft., China.

Crocidura dracula grisescens Howell, 1928

1928. *Crocidura grisescens* Howell, J. Mamm. *9:* 60. Kuatun, Fokien, South-Eastern China.

Crocidura dracula mansumensis Carter, 1942

1942. *Crocidura dracula mansumensis* Carter, Amer. Mus. Nov. No. 1208: 1. Mansum (25.47° N., 96.16° E.), 3,200 ft., Northern Burma.

Crocidura lasiura Dobson, 1890 Ussuri Large White-toothed Shrew

Approximate distribution of species: Ussuri region of Eastern Siberia, Manchuria, Korea; Kiangsu, in China. Asia Minor and Caucasus, and Northern Persia according to Bobrinskii.

Crocidura lasiura lasiura Dobson, 1890

1890. *Crocidura lasiura* Dobson, Ann. Mag. N.H. *5:* 31. Ussuri River, Manchuria.

Crocidura lasiura lasia Thomas, 1906

1906. *Crocidura leucodon lasia* Thomas, Ann. Mag. N.H. *17:* 416. Scalita, near Trebizond, 700–1,000 m., Asia Minor. Ranges to Transcaucasia.

Crocidura lasiura thomasi Sowerby, 1917

1917. *Crocidura thomasi* Sowerby, Ann. Mag. N.H. *20:* 318. Mingyong, 110 miles south-east of Seoul, Korea.

Crocidura lasiura yamashinai Kuroda, 1934

1934. *Crocidura yamashinai* Kuroda, J. Mamm. *15:* 237. Bampo, Kankyo-hokudo, Northern Korea.

1931. *Crocidura lizenkani* Kishida, Zool. Mag. Tokyo, *43:* 377, (*nom. nud.*).

Crocidura lasiura campuslincolnensis Sowerby, 1945

1945. *Crocidura campus-lincolnensis* Sowerby, Musée Heude Notes de Mammalogie, No. 3, 1. Lincoln Avenue, in the western district of Shanghai, Kiangsu, China. (We have not examined this form which from description agrees with the larger members of this species.)

Crocidura olivieri group. (Giant species.)

Crocidura olivieri Lesson, 1827 Egyptian Giant Shrew

Approximate distribution of species: Egypt. Perhaps represented in Kenya and Abyssinia under the name *zaphiri*.

Crocidura olivieri Lesson, 1827

1827. *Sorex olivieri* Lesson, Manuel de Mammalogie, 121. Sakkara, Egypt, as mummies from catacombs.

Other Named Forms

Crocidura fuliginosa Blyth, 1855

1855. *Sorex fuliginosus* Blyth, J. Asiat. Soc. Bengal, *24:* 362. Schwegyin, near Pegu, Burma. The type specimen is in Calcutta, and we have ascertained from the curator of the Calcutta Museum that the type specimen has eight upper teeth and is therefore a *Crocidura*. Mrs. Lindsay erroneously transferred this form to the genus *Suncus*. According to Chasen, it occurs in the Malay Peninsula. This early name may ultimately have to supersede one of the specific names listed above, but we are uncertain of its exact status.

Crocidura nicobarica Miller, 1902

1902. *Crocidura nicobarica* Miller, Proc. U.S. Nat. Mus. *24:* 776. Great Nicobar Island, Nicobar Islands, Bay of Bengal. Unrepresented in London Based on a very large species, head and body 120 mm., tail 90 mm. Basal length of skull 26 mm.

Crocidura andamanensis Miller, 1902

1902. *Crocidura andamanensis* Miller, Proc. U.S. Nat. Mus. *24:* 777. MacPherson Strait, South Andaman Island, Andaman Islands, Bay of Bengal. Unrepresented in London. Head and body 114 mm., tail 86 mm. Basal length of skull 24.8 mm. Probably closely allied to *nicobarica*.

Crocidura bolivari Morales Agacino, 1934

1934. *Crocidura bolivari* Morales Agacino, Bol. Soc. Esp. H.N. *34:* 93, fig. 1. Villa Cisneros, Rio de Oro, North-West Africa. We have not examined this form, which is likely to be valid unless it represents one of the numerous Ethiopian earlier-named species. Condylobasal length 21.6 mm., tail 56 per cent. of head and body, from original description.

Crocidura utsuryoensis Mori, 1937, J. Chosen N.H. Soc. *22:* 40, 41. (*N.V.*) Utsuryo Island, off Korea.

Crocidura nanula Stroganov, 1941, C.R. Acad. Sci. U.R.S.S. *33:* 272. Termez, Russian Turkestan. According to Vinogradov based on a specimen with the dentition of a *Crocidura*, but may represent an abnormal specimen of *Suncus etruscus*.

Genus **FEROCULUS** Kelaart, 1852

1852. *Feroculus* Kelaart, Prodr. Faun. Zeylanica, 31. *Sorex macropus* Blyth = *Sorex feroculus* Kelaart.

1 species: *Feroculus feroculus*, page 86

Feroculus feroculus Kelaart, 1850 Kelaart's Long-clawed Shrew

Approximate distribution of species: Ceylon.

Feroculus feroculus Kelaart, 1850

1850. *Sorex feroculus* Kelaart, J. Ceylon Branch Asiat. Soc. 2, 5: 211. Nuwara Eliya, 6,000 ft., Central Province, Ceylon.
1851. *Sorex macropus* Blyth, J. Asiat. Soc. Bengal, *20:* 163. Nuwara Eliya, Ceylon.
1851. *Corsira newera-ellia* Kelaart, Ann. Mag. N.H. *8:* 340. Nuwara Eliya, Ceylon.
1855. *Sorex newera* Wagner, in Schreber, Säugeth. Suppl. *5:* 564.
1888. *Crocidura macropus* Blanford, Fauna Brit. India, Mamm. *1:* 237.

Genus **SOLISOREX** Thomas, 1924

1924. *Solisorex* Thomas, Spolia Zeylan. *13*, 1: 94. *Solisorex pearsoni* Thomas.

1 species: *Solisorex pearsoni*, page 86

Solisorex pearsoni Thomas, 1924 Pearson's Long-clawed Shrew

Approximate distribution of species: Ceylon.

The presence of two genera of long-clawed shrews in Ceylon and nowhere else is disconcerting. But an examination of the characters we have listed above in the key to the genera should indicate that *Solisorex* cannot be referred to *Feroculus* as a subgenus. Both seem quite distinct from *Crocidura* or *Suncus*.

Solisorex pearsoni Thomas, 1924

1924. *Solisorex pearsoni* Thomas, Spolia Zeylan. *13*, 1: 94, 95. Hakgala, 6,000 ft., near Nuwara Eliya, Central Highlands of Ceylon.

Genus **DIPLOMESODON** Brandt, 1852

1852. *Diplomesodon* Brandt, in Baer & Helmersen, Beitr. Russ. Reich. *17:* 299. *Sorex pulchellus* Lichtenstein.

1 species: *Diplomesodon pulchellum*, page 86

Diplomesodon pulchellum Lichtenstein, 1823 Piebald Shrew

Approximate distribution of species: "Sands between the lower Volga and lower Emba, the Bolshie Barsuki sands (north of the Sea of Aral), on the north-west coast of the Sea of Aral, on Dardsha Peninsula (south-east coast of the Caspian), in Karakum, Kizil-kum, the sands east of the River Chu and the sandy desert south of Lake Balkash between the Rivers Ili and Aksu" (Bobrinskii).

Diplomesodon pulchellum pulchellum Lichtenstein, 1823

1823. *Sorex pulchellus* Lichtenstein, in Eversmann, Reise von Orenburg nach Bokhara, 124. Kirghiz Steppe, Russian Turkestan (collected 1 May 1821).

Diplomesodon pulchellum pallidum Heptner, 1938

1938. *Diplomesodon pulchellum pallidus* Heptner, Bull. Soc. Nat. Moscou, *47:* 165–166. Between Merv and Amu Daria, Russian Turkestan.

Genus **ANOUROSOREX** Milne-Edwards, 1872

1870. *Anourosorex* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. (*Genus caelebs.*)
1872. *Anourosorex* Milne-Edwards, Rech. H.N. Mamm. 264. *Anourosorex squamipes* Milne-Edwards.
1873. *Pygmura* Anderson, P.Z.S. 229 (footnote). Type not given, but species subsequently described as *Anurosorex assamensis* Anderson.
1875. *Anurosorex* Anderson, Ann. Mag. N.H. *16:* 282.

1 species: *Anourosorex squamipes*, page 87

Anourosorex squamipes Milne-Edwards, 1872 Szechuan Burrowing Shrew

Approximate distribution of species: China, from Shensi south to Hupeh, Szechuan, Yunnan; Northern and Western Burma, Assam; Tonkin, in Indo-China.

Anourosorex squamipes squamipes Milne-Edwards, 1872

1872. *Anourosorex squamipes* Milne-Edwards, Rech. H.N. Mamm. 264, pl. 38, fig. 1; pl. 38A, figs. 1–1j. Probably Moupin, Szechuan, China.
1875. *Anourosorex assamensis* Anderson, Ann. Mag. N.H. *16:* 282. Subsasugu, Assam.
1923. *Anourosorex squamipes capnias* G. Allen, Amer. Mus. Nov. No. 100: 10. To-mulang, Chungtien district, 10,000 ft., Yunnan, China.
1923. *Anourosorex assamensis capito* G. Allen, *loc. cit.* 11. Mucheng, Salween drainage, 7,000 ft., Yunnan, China.

Range: Mainland range of the species.

Anourosorex squamipes yamashinai Kuroda, 1935

1935. *Anourosorex squamipes yamashinai* Kuroda, J. Mamm. *16:* 288. Taiheizan, 5,500 ft., Taihokusiu, North Formosa.

Genus **CHIMMAROGALE** Anderson, 1877

1877. *Chimmarogale* Anderson, J. Asiat. Soc. Bengal, *46,* 2: 262. *Crossopus himalayicus* Gray.
1921. *Crossogale* Thomas, Ann. Mag. N.H. *7:* 243. *Crossogale sumatrana* Thomas, from Sumatra (a race of *C. phaeura* Thomas from Borneo).

1 species in the area covered by this list:

Chimmarogale platycephala, page 88

All named forms are represented in the British Museum. The type of *styani* has white underparts, other specimens are intermediate between this and the normal type of dark underparts of the majority of the other specimens, and there is fairly clearly only one valid species of this genus in the mainland of Asia, and Japan. The names *platycephala* and *himalayica* were both published in the year 1842, and it is not possible to say exactly which was published first. *C. himalayicus* was sent to press 10 October 1842, and according to notes left by J. L. Chaworth-Musters, was published in December 1842 "so probably after *platycephala*". We therefore adopt *platycephala*.

Chimmarogale platycephala Temminck, 1842 Himalayan Water-Shrew

Approximate distribution of species: Japan (Kiushiu), Szechuan, Yunnan, South-Eastern China to Fukien and Chekiang; Laos, Annam, Tonkin (in Indo-China); Kashmir, Punjab, Sikkim and Northern Burma.

Chimmarogale platycephala platycephala Temminck, 1842

1842. *Sorex platycephalus* Temminck, Fauna Japon. *1*, Mamm.: 23, plate V, fig. 1. Near Nagasaki and Bungo, Kiushiu, Japan. Occurs Hondo.

Chimmarogale platycephala himalayica Gray, 1842

1842. *Crossopus himalayicus* Gray, Ann. Mag. N.H. *10:* 261. Chamba, North-Eastern Punjab (from notes left by J. L. Chaworth-Musters). Range: recorded from Kashmir, Punjab, Sikkim, Darjeeling, Northern Burma, Yunnan (Likiang Range), Laos and Tonkin, Indo-China.

Chimmarogale platycephala styani de Winton, 1899

1899. *Chimmarogale styani* de Winton, P.Z.S. 574. Yangliupa, North-Western Szechuan. Has also been recorded from Northern Burma.

Chimmarogale platycephala leander Thomas, 1902

1902. *Chimmarogale leander* Thomas, Ann. Mag. N.H. *10:* 165. Kuatun, 1,200 m., North-Western Fukien, China. Range includes Chekiang, China.

Chimmarogale platycephala varennei Thomas, 1927

1927. *Chimmarogale varennei* Thomas, P.Z.S. 45. Dakto, Annam, Indo-China.

Genus **NECTOGALE** Milne-Edwards, 1870

1870. *Nectogale* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. *Nectogale elegans* Milne-Edwards.

1 species: *Nectogale elegans*, page 89

Nectogale elegans Milne-Edwards, 1870 Szechuan Water-Shrew

Approximate distribution of species: Sikkim, Bhutan (B.M.), Northern Burma; Tibet (B.M.); Szechuan, in China, also recorded from Yunnan and Shensi.

NECTOGALE ELEGANS ELEGANS Milne-Edwards, 1870

1870. *Nectogale elegans* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. Moupin, Szechuan, China. Range: Szechuan, Yunnan, Shensi, Northern Burma.

NECTOGALE ELEGANS SIKHIMENSIS de Winton, 1899

1899. *Nectogale sikhimensis* de Winton, P.Z.S. 573. Lathong, 10,000 ft., Sikkim. Range: Sikkim and Tibet.

ORDER DERMOPTERA

FAMILY: Cynocephalidae, page 89

FAMILY CYNOCEPHALIDAE

Genus: *Cynocephalus*, page 89

Thomas (1908) divided the flying lemurs into two genera: *Cynocephalus*, based on *Lemur volans* Linnaeus, for the Philippine forms which have the first upper incisor very reduced and the parietal ridges close together; and *Galeopterus*, based on *Galeopithecus temminckii* Waterhouse, for the Malayan and East Indies forms which have the first upper incisor not so reduced and the parietal ridges widely separated. Chasen (1940) follows Thomas, but we prefer to follow Simpson (1945) and include all flying lemurs in the genus *Cynocephalus*.

Genus **CYNOCEPHALUS** Boddaert, 1768

1768. *Cynocephalus* Boddaert, Dierkundig Mengelwerk *2:* 8 (footnote 1). *Lemur volans* Linnaeus.

1783. *Galeopithecus* Pallas, Acta Acad. Sci. Petrop. *1780,* 1: 208. *Lemur volans* Linnaeus.

(?) 1840. *Galeolemur* Lesson, Spec. Mamm. 261. *Galeopithecus macrourus* Temminck, ? from Ceylon. (*G. macrourus* Temminck, 1838, Coup d'Œil Faune Iles Sonda et Emp. Jap. ix.) This was a flying-squirrel (*Petaurista*) *fide* Thomas, 1908, Ann. Mag. N.H. *1:* 252. It is unidentifiable.

1908. *Galeopterus* Thomas, Ann. Mag. N.H. *1:* 254. *Galeopithecus temminckii* Waterhouse. (*G. variegatus temminckii* from Sumatra.) Valid as a subgenus.

1 species in the area covered by this list:

Cynocephalus variegatus, page 90

Subgenus *GALEOPTERUS* Thomas, 1908

Cynocephalus variegatus Audebert, 1799 Malayan Flying Lemur (Cobego or Colugo)

Approximate distribution of species: Tenasserim and Southern Indo-China (Cochin China), southwards to Malay States, Sumatra, Java, Borneo and many adjacent small islands.

(CYNOCEPHALUS VARIEGATUS VARIEGATUS Audebert, 1799. Extralimital)

1799. *Galeopithecus variegatus* Audebert, H.N. Singes, sig. Rr. Java.

CYNOCEPHALUS VARIEGATUS PENINSULAE Thomas, 1909

1909. *Galeopterus peninsulae* Thomas, Ann. Mag. N.H. 2: 303. Semangko Pass, Malay States. Range: Malay Peninsula, Tenasserim.

Osgood (1932) quoted *Galeopterus variegatus* subsp. from Cochin-China.

ORDER CHIROPTERA

Special works of reference on this order include:

ALLEN, G. M. 1940. *Bats*. Cambridge, Mass. (Harvard University Press).
DOBSON, G. E. 1878. *Catalogue of Chiroptera in the British Museum*.
MILLER, G. S. 1907. *The Families and Genera of Bats. Bull. U.S. Nat. Mus.*, No. 57.
ANDERSEN, K. 1912. *Catalogue of the Chiroptera in the British Museum, 1. Megachiroptera.* All published.)

The first is a general work on the order. The second, though old, is still most useful. The third is the only comprehensive work on the taxonomy of the order, with keys down to genera, and the last is still the only comprehensive work on the Megachiroptera. Miller seems to recognize too many families, and Simpson (1945, 180) takes the view that recent specialists recognize too many genera. Neither of the present authors claims any extensive knowledge of this order, which seems very much a specialist field. The listing of the species is entirely provisional. Our thanks are due to our colleague, Mr. R. W. Hayman, for his help with this order.

FAMILIES: Emballonuridae, page 103
Megadermatidae, page 107
Molossidae, page 132
Nycteridae, page 106
Pteropodidae, page 91
Rhinolophidae, page 109
Rhinopomatidae, page 101
Vespertilionidae, page 136

Another group, the Hipposiderinae, was regarded as a family distinct from the Rhinolophidae by Miller, but by many authors is considered a subfamily of that group.

For keys to the various families, see Miller, 1907, *Families and Genera of Bats*.

SUB-ORDER MEGACHIROPTERA

FAMILY PTEROPODIDAE

The classic work on this family is by Knud Andersen (1912) and it is surprising that it is entirely overlooked in the very detailed bibliography given by Simpson, 1945, p. 273.

Simpson (p. 54) has attempted some generic reduction in this family, but in a rather unfortunate manner; for instance, one genus ("*Callinycteris*") shown by Andersen to be nothing but a synonym of *Eonycteris* is listed as valid (p. 55), whereas others which are seemingly reasonably distinct are placed as subgenera or in the wrong synonymy (for instance, *Pterocyon* = *Eidolon*, not *Rousettus* as listed by Simpson).

Genera: *Cynopterus*, page 98
Eidolon, page 91
Eonycteris, page 100
Macroglossus, page 100
Megaerops, page 99
Pteropus, page 93
Rousettus, page 92
Sphaerias, page 100

For a key to these genera see Knud Andersen, 1912, *Cat. Chiroptera B.M. 1* This author also gives a key to all the species in the present family named before 1912.

SUBFAMILY Pteropodinae

Genus **EIDOLON** Rafinesque, 1815

1815. *Eidolon* Rafinesque, Analyse de la Nature, 54. *Vespertilio vampyrus helvus* Kerr. For note on validity of *Eidolon* Rafinesque and fixing of type species, see K. Andersen, 1908, Ann. Mag. N.H. *1:* 432.
1861. *Pterocyon* Peters, Mber. Preuss. Akad. Wiss. 423. *Pterocyon paleaceus* Peters = *Vespertilio vampyrus helvus* Kerr.
1881. *Leiponyx* Jentink, Notes Leyden Mus. *3:* 60 *Leiponyx büttikoferi* Jentink = *Vespertilio vampyrus helvus* Kerr.
1882. *Liponyx* Forbes, Zool. Record, *18* (for 1881), Mamm. 13.

1 species in the area covered by this list:

Eidolon sabaeum, page 92

The first-named species in this genus is *Eidolon helvum* Kerr, 1792, from Senegal, which ranges eastwards to Somaliland, thence southwards as far as the neighbourhood of Cape Town. Andersen separated the Arabian representative as *E. sabaeum*; it is closely allied but is on average a smaller form.

Eidolon sabaeum K. Andersen, 1907 Arabian Straw-coloured Fruit Bat

Approximate distribution of species: Southern Arabia.

EIDOLON SABAEUM Andersen, 1907

1907. *Pteropus sabaeus* Andersen, Ann. Mag. N.H. *19:* 505. Lahej, Aden district, Southern Arabia.

Genus **ROUSETTUS** Gray, 1821

1821. *Rousettus* Gray, London Med. Repository, 15: 299. *Pteropus aegyptiacus* E. Geoffroy.
1829. *Cercopteropus* Burnett, Quart. J. Sci. Lit. Art. 1: 269. *Pteropus aegyptiacus* Geoffroy.
1843. *Xantharpyia* Gray, List Mamm. B.M. xix, 37. *Pteropus amplexicaudatus* Geoffroy.
1843. *Eleutherura* Gray, List Mamm. B.M. xix, *nom. nud.*
1844. *Eleutherura* Gray, Voy. Sulphur, *1:* 29. *Pteropus leachii* Smith, from South Africa.
1852. *Cynonycteris* Peters, Reise nach Mossambique, Säugeth, 25. *Pteropus collaris* Illiger = *Pteropus leachii* Smith, from South Africa.
1870. *Senonycteris* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, B.M. 115. *Pteropus seminudus* Kelaart.

5 species in the area covered by this list:

Rousettus aegyptiacus, page 92
Rousettus amplexicaudatus, page 93
Rousettus arabicus, page 92
Rousettus leschenaulti, page 93
Rousettus seminudus, page 93

A key to these species is given by K. Andersen, 1912.

Rousettus aegyptiacus E. Geoffroy, 1810 Egyptian Fruit Bat

Approximate distribution of species: Cyprus, Palestine, Syria, Egypt, and Ethiopian Africa in part, south to Angola.

ROUSETTUS AEGYPTIACUS E. Geoffroy, 1810

1810. *Pteropus egyptiacus* Geoffroy, Ann. Mus. H.N. Paris, *15:* 96 (misprint), corrected to *aegyptiacus* in 1818, Description de l'Egypte, H.N. *2:* 134, pl. 3, fig. 2. Great Pyramid, Giza, Egypt.
1825. *Pteropus geoffroyi* Temminck, Mon. Mamm. *1:* 197. Senegal, and probably north coast of Africa.

Rousettus arabicus Anderson & de Winton, 1902

Approximate distribution of species: Arabia (Aden, Muscat), Kishim Island Persian Gulf) and Karachi, Sind (Western India).

Rousettus arabicus Anderson & de Winton, 1902

1902. *Rousettus arabicus* Anderson & de Winton, Zool. Egypt, Mamm. 86, 88, 89–90. Lahej, near Aden, Southern Arabia.

Rousettus amplexicaudatus E. Geoffroy, 1810

Approximate distribution of species: according to Chasen (1940, 29) Northern Siam and Tenasserim; Cambodia, Indo-China (K. Andersen); also from Malay States, Sumatra, Java, Borneo, Philippine Islands, Timor, Flores, etc.

Rousettus amplexicaudatus amplexicaudatus Geoffroy, 1810

1810. *Pteropus amplexicaudatus* E. Geoffroy, Ann. Mus. H.N. Paris, *15:* 96, pl. 4. Island of Timor.

Rousettus leschenaulti Desmarest, 1820

Approximate distribution of species: Kumaon, Nepal, Rajputana, Bhutan Duars, Burma, Tenasserim; Peninsula of India (Western Ghats, Bombay, Coorg, etc.); North Siam (Chasen, 1940); Tonkin, Indo-China. Has been recorded from Amoy, Southern China; Java.

Rousettus leschenaulti leschenaulti Desmarest, 1820

1820. *Pteropus leschenaulti* Desmarest, Encycl. Méth. Mamm. *1:* 110. Pondicherry, India.
1835. *Pteropus pyrivorus* Hodgson, J. Asiat. Soc. Bengal, *4:* 700. Nepal.
1841. *Pteropus pirivarus* Hodgson, *loc. cit. 10:* 908.
1843. *Cynopterus marginatus* Gray, List Mamm. B.M. 38. Not of Geoffroy, 1810.
1843. *Cynopterus affinis* Gray, *loc. cit.* 39. Himalayas.
1870. *Eleutherura fuliginosa* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, 118. Laos Mountains, Siam.
1870. *Eleutherura fusca* Gray, *loc. cit.* 119. ? India.
1873. *Cynonycteris infuscata* Peters, Mber. Preuss. Akad. Wiss. 487. Calcutta, India.

Rousettus seminudus Kelaart, 1850

Distribution: Ceylon.

Rousettus seminudus Kelaart, 1850

1850. *Pteropus seminudus* Kelaart, J. Ceylon Br. Asiatic Soc. *2*: 216. Mount Lavinia, Ceylon.

Genus **PTEROPUS** Brisson, 1762

1762. *Pteropus* Brisson, Regn. Anim. 13, 153–155. *Pteropus niger* (Kerr). Hopwood (1947) would ignore Brisson and date *Pteropus* from Erxleben, 1777, Syst. Anim. 130, with the same type species.
1799. *Spectrum* Lacepède, Tabl. Mamm. 15. *Pteropus niger* (Kerr). Not of Scopoli, 1777.
1866. *Eunycteris* Gray, P.Z.S. 64. *Pteropus phaiops* Temminck = *Pteropus melanopogon* Peters, from Amboina.

PTEROPUS [*contd.*]

1870. *Pselaphon* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, B.M. 110. *Pteropus pselaphon* Layard, from Bonin Islands.

1899. *Sericonycteris* Matschie, Megachiroptera Berlin Mus. 6, 30. *Pteropus subniger* (Kerr) from Reunion and Mauritius.

1907. *Desmalopex* Miller, Fam. & Gen. Bats, 60. *Pteropus leucopterus* Temminck, from Luzon, Philippine Islands.

The genus appears to need revision; in the present region, the following six species seem most likely to prove valid:

Pteropus dasymallus, page 94
Pteropus hypomelanus, page 95
Pteropus lylei, page 96
Pteropus mariannus, page 95
Pteropus melanotus, page 96
Pteropus vampyrus, page 96

Andersen divided this large genus into 17 species groups and 82 species. Four of his groups occur in the present region.

Pteropus subniger group

(This is the "*hypomelanus* group" of Andersen, but *P. subniger* (Kerr, 1792), from Reunion Island, east of Madagascar, is the prior name, and we feel that species groups should be named after the earliest-named species which they contain.)

Pteropus dasymallus Temminck, 1825 Liukiu Islands Flying Fox

Approximate distribution of species: Liukiu Islands and Formosa.

PTEROPUS DASYMALLUS DASYMALLUS Temminck, 1825

1824. *Pteropus rubricollis* Siebold, de Hist. Nat. Jap. 13. Liukiu Islands (Andersen, 1912). Not of Geoffroy, 1810.

1825. *Pteropus dasymallus* Temminck, Mon. Mamm. *1:* 180, pl. 10. Type locality restricted to Kuchino-Erabu, North Liukiu Islands (Kuroda, 1933).

1929. *Pteropus yamagatai* Kishida, Lansania, Tokyo, *1*, 8: 125. Kuchino-Erabu, North Liukiu Islands.

PTEROPUS DASYMALLUS FORMOSUS Sclater, 1873

1873. *Pteropus formosus* Sclater, P.Z.S. 193, pl. 22. Taku, Formosa.

PTEROPUS DASYMALLUS INOPINATUS Kuroda, 1933

1933. *Pteropus dasymallus inopinatus* Kuroda, J. Mamm. *14:* 314. Nago-Mura, Kunjan, Okinawa Island, Liukiu Islands.

PTEROPUS DASYMALLUS YAYEYAMAE Kuroda, 1933

1933. *Pteropus dasymallus yayeyamae* Kuroda, J. Mamm. *14:* 315. Ishigaki, Yayeyama group, South Liukiu Islands.

Pteropus hypomelanus Temminck, 1853 Small Flying Fox

Approximate distribution of species: Cochin-China, Siam, Mergui Archipelago, islands off Lower Siam, Straits of Malacca, islands west of Sumatra, Natuna and Anamba Islands, islands off Borneo; Celebes, Philippine Islands, New Guinea.

(Pteropus hypomelanus hypomelanus Temminck, 1853. Extralimital)

1853. *Pteropus hypomelanus* Temminck, Esq. Zool. Côte Guiné, 61. Ternate Island (Gilolo group, between Celebes and New Guinea).

Pteropus hypomelanus condorensis Peters, 1869

1869. *Pteropus condorensis* Peters, Mber. Preuss. Akad. Wiss. 393. Pulau Condor (Condor Island), off Cambodia, Indo-China. Range: said to occur Cambodia and Siam (Andersen).

Pteropus hypomelanus geminorum Miller, 1903

1903. *Pteropus geminorum* Miller, Smith's Misc. Coll. *45:* 60. South Twin Island, Mergui Archipelago. Range includes certain West Siamese Islands (see Chasen, 1940, Bull. Raffles Mus. *15:* 22).

Pteropus (?) hypomelanus satyrus Andersen, 1908

1908. *Pteropus satyrus* Andersen, Ann. Mag. N.H. *2:* 362. Narcondam, North Andaman Islands, Bay of Bengal. (Andersen retained this form as a species, but from descriptions it seems very close to *hypomelanus*.)

Andersen also referred the following to the present group:

Pteropus faunulus Miller, 1902

1902. *Pteropus faunulus* Miller, Proc. U.S. Nat. Mus. *24:* 785. Car Nicobar, Nicobar Islands, Bay of Bengal.

Pteropus mariannus group

Pteropus mariannus Desmarest, 1822

Approximate distribution of species: described from Mariana Islands, Western Pacific; represented in the Liukiu Islands.

(Pteropus mariannus mariannus Desmarest, 1822. Extralimital)

1822. *Pteropus mariannus* Desmarest, Encycl. Méth. (Mamm.) *2:* 547. Mariana Islands, Western Pacific.

Pteropus mariannus loochoensis Gray, 1870

1870. *Pteropus loochoensis* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, B.M. 106. Liukiu Islands.

1892. *Pselaphon luchuensis* Seitz, Mitt. Dtsch. Ges. Naturk. Ostasiens, *5:* 364. (*N.V.*)

1894. *Pteropus keraudreni* var. *loochooensis* Fritze, Zool. Jb. Syst. *7:* 854. Okinawa, Liukiu Islands.

Pteropus melanotus group

Pteropus melanotus Blyth, 1863 Nicobar Flying Fox

Approximate distribution of species: Nicobar Islands, and as here understood, Andaman Islands; Nias and Engano Islands; Western Sumatra; Christmas Island (south of Java).

Pteropus melanotus melanotus Blyth, 1863

1846. *Pteropus edulis* Blyth, J. Asiat. Soc. Bengal, *15:* 367. Not of E. Geoffroy, 1810.
1861. *Pteropus nicobaricus* Fitzinger, S.B. Akad. Wiss. Wien. *42:* 389, *nom. nud.*
1863. *Pteropus melanotus* Blyth, Cat. Mamm. Mus. Asiat. Soc. 20. Nicobar Islands, Bay of Bengal.

Pteropus (?) melanotus tytleri Mason, 1908

1908. *Pteropus tytleri* Mason, Rec. Ind. Mus. *2:* 162. Rutland Island, South Andaman Islands, Bay of Bengal.

On the status of this form, see K. Andersen, 1912, *Cat. Chiropt. 1:* 821. It does not seem, from present knowledge, that this form should be granted the rank of a valid species. According to Chasen, the other members of Andersen's *melanotus* group, respectively from Nias Island and Engano Islands, west of Sumatra, and Christmas Island, south of Java, are all races of *P. melanotus*, although Andersen listed them all binominally.

Pteropus vampyrus group

We provisionally follow Andersen in listing members of the *vampyrus* group as species, though with the exception of *P. lylei* it seems more likely, as Andersen himself suggests on p. 325, that they are in reality all members of one species for which the first name is *P. vampyrus*.

Pteropus lylei K. Andersen, 1908

Approximate distribution of species: Siam (Bangkok region) and Saigon, Cochin China.

Pteropus lylei Andersen, 1908

1908. *Pteropus lylei* Andersen, Ann. Mag. N.H. *2:* 367. Bangkok, Siam.

Pteropus vampyrus Linnaeus, 1758 Malayan Large Flying Fox

Approximate distribution of species: has been recorded from Tenasserim (*Zool. Record*, 1926, *Mamm.* 47); Annam, and Phu Quoc Island, Indo-China (Osgood, 1932). Also from Malay States, Sumatra, Java, Borneo, Philippine Islands, Bali, Timor, and numerous adjacent small Malaysian islands.

(Pteropus vampyrus vampyrus Linnaeus, 1758. Extralimital)

1758. *Vespertilio vampyrus* Linnaeus, Syst. Nat. 10th ed. *1:* 31. Java.

PTEROPUS VAMPYRUS MALACCENSIS Andersen, 1908

1908. *Pteropus vampyrus malaccensis* Andersen, Ann. Mag. N.H. *2:* 368. Kuala Tembeling, Pahang, 200 ft., Malay Peninsula. Range: Malay States, Sumatra, some adjacent islands; northwards to Indo-China, as noted above, and Tenasserim.

Pteropus giganteus Brünnich, 1782 Indian Flying Fox

Approximate distribution of species: Ceylon, Peninsula of India (widely distributed), northwards to Rajputana, Cutch, Kathiawar and district, Kumaon, Punjab; Nepal, Sikkim, Bhutan Duars, Assam, Manipur, Pegu in Burma.

PTEROPUS GIGANTEUS GIGANTEUS Brünnich, 1782

1782. *Vespertilio gigantea* Brünnich, Dyrenes Historie, *1:* 45. Bengal, India.
1825. *Pteropus medius* Temminck, Mon. Mamm. *1:* 176. Calcutta; Pondicherry, India.
1828. *Pteropus edwardsi* I. Geoffroy, Dict. Class. H.N. *14:* 699. Bengal. Not of E. Geoffroy, 1810.
1870. *Pteropus kelaarti* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, B.M. 104. Ceylon.

Range: Ceylon, Peninsular India north to Punjab, and apparently eastwards to Sikkim, Bhutan Duars, Pegu (Wroughton, 1918).

PTEROPUS GIGANTEUS LEUCOCEPHALUS Hodgson, 1835

1835. *Pteropus leucocephalus* Hodgson, J. Asiat. Soc. Bengal, *4:* 700. Central region of Nepal.
1839. *Pteropus assamensis* M'Clelland, P.Z.S. 148. Assam.
1840. *Pteropus rubricollis* (misspelt *rubicollis*) Ogilby, Madras J. Lit. *12:* 146. Assam. *Nom. nud.* Not of E. Geoffroy, 1810.

Range: Nepal, Assam, Manipur.

Other forms listed as species by Andersen in the present group:

PTEROPUS ARIEL G. Allen, 1908

1908. *Pteropus ariel* G. Allen, Bull. Mus. Comp. Zool. Harv. *52,* 3: 28, fig. 1. Male Atoll, Maldive Islands (south-west of Southern Peninsular India.)

PTEROPUS INTERMEDIUS Andersen, 1908

1908. *Pteropus intermedius* Andersen, Ann. Mag. N.H. *2:* 368. Amherst, Tenasserim. (This seems intermediate between *P. vampyrus* and *P. giganteus,* suggesting that all these forms are really probably only subspecies of *P. vampyrus.*)

Incertae sedis

Pteropus daitoensis Kuroda, 1921, J. Mamm. *2:* 210. Kita-Daitojima, Daito Islands, South-Eastern Liukiu Islands.

Genus **CYNOPTERUS** F. Cuvier, 1824

1824. *Cynopterus* F. Cuvier, Dents Mamm. 248. *Pteropus marginatus* Geoffroy = *Vespertilio sphinx* Vahl.
1828. *Pachysoma* E. Geoffroy, Cours. H.N. Mamm. 13, leçon 26. Not of Macleay, 1821.
1906. *Niadius* Miller, Proc. Biol. Soc. Washington, *19:* 83. *Cynopterus princeps* Miller, from Nias Island, Western Sumatra.

2 species in the area covered by this list:

Cynopterus brachyotis, page 98
Cynopterus sphinx, page 98

These two species are closely allied, but occur together. Other species occur in the Malay region.

Cynopterus sphinx Vahl, 1797 — Short-nosed Fruit Bat

Approximate distribution of species: Hainan; Peninsula of India, where it is widely distributed, Ceylon, Bengal, Kumaon, Sikkim, Bhutan Duars, Burma, Indo-China, Siam, also Sumatra, Java, Bali, Lombok, Timor.

CYNOPTERUS SPHINX SPHINX Vahl, 1797

1797. *Vespertilio sphinx* Vahl, Skr. Nat. Selsk Copenhagen, *4*, 1: 123. Tranquebar, Madras, India.
1797. *Vespertilio fibulatus* Vahl, *loc. cit.* 124. Tranquebar, Madras, India.
1803. *Pteropus pusillus* E. Geoffroy, Cat. Mamm. Mus. H.N. 49. India. Not valid, as according to Sherborn this was never published.
1810. *Pteropus marginatus* E. Geoffroy, Ann. Mus. H.N. Paris, *15:* 97, pl. v. Bengal.
1837. *Pachysoma brevicaudatum* Temminck, Mon. Mamm. *2:* 92. Calcutta, India.
1870. *Cynopterus marginatus* var. *ellioti* Gray, Cat. Monkeys, Lemurs & Fruiteating Bats, B.M. 122.

Range: Ceylon, Peninsula of India, Kumaon, Sikkim, Bhutan Duars, Sylhet (Assam), Chin Hills and Shan States, Burma, Northern Siam.

CYNOPTERUS SPHINX GANGETICUS Andersen, 1910

1910. *Cynopterus sphinx gangeticus* Andersen, Ann. Mag. N.H. *6:* 623. Lucknow, United Provinces, India. Range includes Central Provinces and Palanpur, India.

Cynopterus brachyotis Müller, 1838

Approximate distribution of species: has been recorded from near Canton, Southern China; Ceylon; Andaman and Nicobar Islands; Tenasserim, Burma, Assam; Siam; Malay States, Sumatra, Java, Borneo, and adjacent small islands, Celebes, Philippine Islands.

(CYNOPTERUS BRACHYOTIS BRACHYOTIS Muller, 1838. Extralimital)

1838. *Pachysoma brachyotis* Müller, Tijdschr. Natuur. Gesch. *5*, 1: 146. Borneo. Range: Lower Siam, east to Celebes, Philippines.

CYNOPTERUS BRACHYOTIS SCHERZERI Zelebor, 1869

1869. *Cynopterus marginatus* var. (*Pachysoma scherzeri*) Zelebor, Reise Novara, Säugeth.
13. Car Nicobar, Nicobar Islands. Range includes Great Nicobar Island.

CYNOPTERUS BRACHYOTIS CEYLONENSIS Gray, 1870

1870. *Cynopterus marginatus* var. *ceylonensis* Gray, Cat. Monkeys, Lemurs & Fruit-eating Bats B.M. 122. Ceylon.

CYNOPTERUS BRACHYOTIS BRACHYSOMA Dobson, 1871

1871. *Cynopterus brachysoma* Dobson, Proc. Asiat. Soc. Bengal, 105. Andaman Islands, Bay of Bengal.
1873. *Cynopterus marginatus* var. *andamanensis* Dobson, *loc. cit.* 148, *nom. nud.* J. Asiat. Soc. Bengal, *42:* 201, pl. xiv, fig. 5.

CYNOPTERUS BRACHYOTIS ANGULATUS Miller, 1898

1898. *Cynopterus angulatus* Miller, Proc. Acad. Nat. Sci. Philadelphia, 316. Trang, Lower Siam. Range: Kindat (Chindwin), Western Burma, Tenasserim, Siam (Nan, Bangkok, Chiengmai, etc.), Cambodia and Annam, Natuna Islands and Anamba Islands, various small islands off Siam.

CYNOPTERUS BRACHYOTIS HOFFETI Bourret, 1944

1944. *Cynopterus brachyotis hoffeti* Bourret, Notes Trav. Ecole Sup. Sci. Hanoi, *3:* 4. Cho-Bo, near Hanoi, Tonkin, Indo-China.

Genus **MEGAEROPS** Peters, 1865

1841. *Megera* Temminck, Mon. Mamm. *2:* 274. *Pachysoma ecaudatum* Temminck.
1841. *Megaera* Temminck, *loc. cit.* 359. Not of Wagler, 1830, or Robineau-Devoidy, 1830.
1865. *Megaerops* Peters, Mber. Preuss. Akad. Wiss. 256. *Megaera ecaudata* Temminck.

Osgood has recorded this principally Malaysian genus from Indo-China. Simpson (1945) would refer it to *Ptenochirus*, Peters, 1861, from which it seems reasonably distinct.

1 species: *Megaerops ecaudatus*, page 99

Megaerops ecaudatus Temminck, 1837 Temminck's Fruit Bat

Approximate distribution of species: Malay States, Sumatra, Borneo; recorded from Annam, in Indo-China, by Osgood (1932).

MEGAEROPS ECAUDATUS Temminck, 1837

1837. *Pachysoma ecaudatum* Temminck, Mon. Mamm. *2:* 94. Padang, Western Sumatra.

Genus **SPHAERIAS** Miller, 1906

1906. *Sphaerias* Miller, Proc. Biol. Soc. Washington, *19:* 83. *Cynopterus blanfordi* Thomas.

1 species: *Sphaerias blanfordi*, page 100

Sphaerias blanfordi Thomas, 1891 Blanford's Fruit Bat

Approximate distribution of species: Karin Hills, Burma, and Siam according to Tate.

Sphaerias blanfordi Thomas, 1891

1891. *Cynopterus blanfordi* Thomas, Ann. Mus. Stor. Nat. Genova, *2*, 10: 884, 921–922, pl. XI, figs. 1–2. Leito, Cheba, Karin Hills, 1,000 m., Burma.

Subfamily Macroglossinae

Genus **EONYCTERIS** Dobson, 1873

1873. *Eonycteris* Dobson, Proc. Asiat. Soc. Bengal, 148. *Macroglossus spelaeus* Dobson.
1889. *Callinycteris* Jentink, Notes Leyden Mus. *11:* 209. *Callinycteris rosenbergii* Jentink, from Celebes.

1 species in the area covered by this list:

Eonycteris spelaea, page 100

Eonycteris spelaea Dobson, 1871 Dobson's Long-tongued Fruit Bat

Approximate distribution of species: Burma, Indo-China, Siam, Malay States, Sumatra, Java, Borneo, Luzon (Philippine Islands).

Eonycteris spelaea Dobson, 1871

1871. *Macroglossus spelaeus* Dobson, Proc. Asiat. Soc. Bengal, 105, 106. Farm Caves, Moulmein, Tenasserim. Range includes Nan in Siam, Tonkin, Laos, Cochin-China in Indo-China, Malay States, Sumatra, Java, Borneo.

Genus **MACROGLOSSUS** F. Cuvier, 1824

1824. *Macroglossus* Cuvier, Dents Mamm. 248. *Pteropus minimus* Geoffroy.
1840. *Kiodotus* Blyth, in Cuvier, Anim. Kingd. 69. New name for *Macroglossus*, under the impression that it was preoccupied by *Macroglossum* Scopoli, 1777.
1848. *Rhynchocyon* Gistel, Naturg. Thierr. ix. Not of Peters, 1847.
1891. *Carponycteris* Lydekker, in Flower & Lydekker, Mamm. Living & Extinct, 654. New name for *Macroglossus* Cuvier.
1902. *Odontonycteris* Jentink, Notes Leyden Mus. *23:* 140. *Odontonycteris meyeri* Jentink = *Macroglossus lagochilus* Matschie, from Buru, Moluccas.

1 species in the area covered by this list:

Macroglossus minimus, page 101

Macroglossus minimus E. Geoffroy, 1810 Small Long-tongued Fruit Bat

Approximate distribution of species: Tenasserim; Malay States, Sumatra, Java, Bali, and a few adjacent islands. (Tate also quotes it from Darjeeling.)

(Macroglossus minimus minimus Geoffroy, 1810. Extralimital)

1810. *Pteropus minimus* E. Geoffroy, Ann. Mus. N.H. Paris, *15:* 97. Java.

Macroglossus minimus sobrinus Andersen, 1911

1911. *Macroglossus minimus sobrinus* Andersen, Ann. Mag. N.H. *7:* 642. Gunong Igari, Perak, 2,000 ft., Malay States. Range: northwards to Tenasserim.

sub-order Microchiroptera

FAMILY RHINOPOMATIDAE

Genus: *Rhinopoma*, page 101

Genus **RHINOPOMA** Geoffroy, 1818

1818. *Rhinopoma* Geoffroy, Description de l'Egypte, *2:* 113. *Vespertilio microphyllus* Brünnich.

1821. *Rhynopoma* Bowdich, Anal. Nat. Class. Mamm. 30. *Vespertilio microphyllus* Brünnich.

3 species in the area covered by this list:

Rhinopoma hardwickei, page 102
Rhinopoma kinneari, page 102
Rhinopoma microphyllum, page 102

Formerly, as by Dobson and Blanford, all known forms were referred to a single species, *R. microphyllum*, although Dobson stated that the Asiatic representatives differed in certain respects from the African ones. See particularly Thomas, 1903, *Ann. Mag. N.H. 11:* 496, and Wroughton, 1912, *J. Bombay N.H. Soc. 21:* 767. Wroughton gave a key to the known forms. Thomas, in erecting *cystops*, apparently failed to compare it with *hardwickei*. It seems clear that in Egypt there are two species (a larger and a smaller) occurring together. It also seems clear from Wroughton's key that there are two groups of species, a larger (rare) group and a smaller group (or species) which occurs throughout much of the range of the genus, at least as far as this list is concerned. The prior name for the smaller species is *R. hardwickei*. According to Wroughton, this and its allies differ from the large *microphyllum* group both in an external and in a cranial character, but it is very difficult to believe that there are in reality four distinct species of smaller *Rhinopoma*, and the smaller named species are here provisionally made representative races of the first-named *hardwickei*. The large Indian *R. kinneari* is, from descriptions, larger than the Egyptian *R. microphyllum*, and widely separated from it geographically. Another equally large species has been described from Sumatra.

Rhinopoma microphyllum Brünnich, 1782 Larger Rat-tailed Bat

Approximate distribution of species: Arabia, Egypt, Palestine, perhaps Persia.

RHINOPOMA MICROPHYLLUM Brünnich, 1782

1782. *Vespertilio microphyllus* Brünnich, Dyrenes Hist. *1:* 50, pl. 6, figs. 1–4. Arabia and Egypt.

Rhinopoma kinneari Wroughton, 1912

Approximate distribution of species: Cutch, Kathiawar, Nimar and Bengal, India.

RHINOPOMA KINNEARI Wroughton, 1912

1912. *Rhinopoma kinneari* Wroughton, J. Bombay N.H. Soc. *21*, 3: 767. Bhuj, Cutch, India.

Rhinopoma hardwickei Gray, 1831 Lesser Rat-tailed Bat

Approximate distribution of species, as here understood: Peninsular India, known from Rajputana, Allahabad, Khandesh, Dharwar, Sind, Cutch, Palanpur, Kathiawar, Gwalior, Central Provinces, Bellary, Bengal; (Kashmir (Dobson) and Burma (Blanford)); Lower Siam; Arabia, Palestine and Persia; Egypt and the Sudan, west to Asben region, south to Lake Rudolf.

RHINOPOMA HARDWICKEI HARDWICKEI Gray, 1831

1831. *Rhinopoma hardwickii* Gray, Zool. Misc. 37. India. Range: Indian range of species above, and Lower Siam.

RHINOPOMA HARDWICKEI CYSTOPS Thomas, 1903

1903. *Rhinopoma cystops* Thomas, Ann. Mag. N.H. *11:* 496. Luxor, Egypt. Range: Egypt and Sudan, westwards to Asben.

RHINOPOMA HARDWICKEI MUSCATELLUM Thomas, 1903

1903. *Rhinopoma muscatellum* Thomas, Ann. Mag. N.H. *11:* 498. Wadi Bani Ruha, Muscat, Arabia.

RHINOPOMA HARDWICKEI ARABIUM Thomas, 1913

1913. *Rhinopoma cystops arabium* Thomas, Ann. Mag. N.H. *12:* 89. Wasil, Yemen, 4,000 ft., Arabia. Range: to Midian (North-Western Arabia) and Palestine.

RHINOPOMA HARDWICKEI SEIANUM Thomas, 1913

1913. *Rhinopoma muscatellum seianum* Thomas, Ann. Mag. N.H. *12:* 90. Seistan, Persia.

RHINOPOMA HARDWICKEI PUSILLUM Thomas, 1920

1920. *Rhinopoma pusillum* Thomas, J. Bombay N.H. Soc. *27:* 25. Sib, South-Eastern Persia.

FAMILY EMBALLONURIDAE

Genera: *Coleura*, page 103
Emballonura, page 103
Taphozous, page 104

A key to these, and all genera of Microchiroptera, will be found in Miller, 1907, *Families & Genera of Bats* (Emballonuridae key, p. 85).

Genus **EMBALLONURA** Temminck, 1838

1838. *Emballonura* Temminck, Tijdschr. Natuur. Gesch. *5:* 22. *Emballonura monticola* Temminck.

1 species in the area covered by this list:
Emballonura monticola, page 103

Emballonura monticola Temminck, 1838 Sheath-tailed Bat

Approximate distribution of species: Tenasserim, Northern Siam (Bangkok, quoted by Chasen, 1940). Malay States, Java, Sumatra, Borneo, and certain adjacent small islands. Philippine Islands, according to Dobson.

EMBALLONURA MONTICOLA Temminck, 1838

1838. *Emballonura monticola* Temminck, Tijdschr. Natuur. Gesch. *5:* 25, pl. ii, figs. 1–2. Java.
(?) 1891. *Emballonura semicaudata* Blanford, Fauna Brit. India, Mamm. *2:* 345. ? Not of Peale, 1848.
1898. *Emballonura peninsularis* Miller, Proc. Acad. Nat. Sci. Philadelphia, 323. Trang, Lower Siam.

Range: as above.

Genus **COLEURA** Peters, 1867

1867. *Coleura* Peters, Mber. Preuss. Akad. Wiss. 479. *Emballonura afra* Peters.

1 species in the area covered by this list:
Coleura gallarum, page 103

The first-named species in this genus is *C. afra* Peters, 1852, from Portuguese East Africa. The South Arabian form is very like it apparently, but from descriptions is a little smaller in forearm and upper toothrow measurements.

Coleura gallarum Thomas, 1915 Aden Sheath-tailed Bat

Approximate distribution of species: Somaliland, Sudan and Congo, to Aden district, Southern Arabia.

COLEURA GALLARUM GALLARUM Thomas, 1915

1915. *Coleura gallarum* Thomas, Ann. Mag. N.H. *15:* 576. Zeyla, British Somaliland. Ranges to Aden district, South-Western Arabia.

Genus **TAPHOZOUS** Geoffroy, 1818

1818. *Taphozous* Geoffroy, Description de l'Egypte, *2:* 113. *Taphozous perforatus* Geoffroy.
1838. *Saccolaimus* Temminck, Tijdschr. Natuur. Gesch. *5*: 6. *Taphozous saccolaimus* Temminck.
1866. *Saccolaimus* Gray, Ann. Mag. N.H. *17:* 92. *Taphozous saccolaimus* Temminck. Valid as a subgenus.
1876. *Taphonycteris* Dobson, P.Z.S. *1875:* 548. *Taphozous saccolaimus* Temminck.
1922. *Liponycteris* Thomas, Ann. Mag. N.H. *9:* 267. *Taphozous nudiventris* Cretzschmar. Valid as a subgenus.

7 species in the area covered by this list:

Taphozous kachhensis, page 106
Taphozous longimanus, page 104
Taphozous melanopogon, page 105
Taphozous nudiventris, page 105
Taphozous perforatus, page 104
Taphozous saccolaimus, page 106
Taphozous theobaldi, page 105

We agree with Simpson that *Saccolaimus* and *Liponycteris*, often given generic rank, may well be regarded as subgenera. Miller, in his *Families & Genera of Bats*, referred all these groups to a single genus, and Tate, 1941, *Amer. Mus. Nov.* No. 1141: 1, in a review of the Eastern members of the genus, seems to come to the same conclusion. Dobson (1878, 379) gives a key to the species.

Subgenus *TAPHOZOUS* Geoffroy, 1818

Taphozous perforatus E. Geoffroy, 1818 — Tomb Bat

Approximate distribution of species: Egypt, southwards to Sudan and Kenya; Arabia; Cutch and Kathiawar, in India.

Taphozous perforatus perforatus E. Geoffroy, 1818

1818. *Taphozous perforatus* Geoffroy, Description de l'Egypte, *2:* 126. Egypt. Range: also listed from Cutch and Kathiawar, India, by Wroughton (1918).

Taphozous perforatus haedinus Thomas, 1915

1915. *Taphozous perforatus haedinus* Thomas, J. Bombay N.H. Soc. *24:* 62. Chanler Falls, Northern Guaso Nyiro, Kenya, East Africa. Range: to Aden, Southern Arabia, and district.

Taphozous longimanus Hardwicke, 1825

Approximate distribution of species: Ceylon, Peninsula of India, where it appears to be quite widely distributed, northwards to Palanpur, Bengal, thence to Burma, Tenasserim, Malay States, Sumatra, Java, Borneo, probably Flores, whence Dobson described a variety.

Taphozous longimanus longimanus Hardwicke, 1825

1825. *Taphozous longimanus* Hardwicke, Trans. Linn. Soc. London, *14:* 525. Calcutta, Bengal, India.

1841. *Taphozous fulvidus* Blyth, J. Asiat. Soc. Bengal, *10:* 975. Darjeeling, North-Eastern India.

1841. *Taphozous brevicaudus* Blyth, *loc. cit.* 976. Travancore, India.

1842. *Taphozous cantori* Blyth, *loc cit. 11:* 784. Calcutta, India.

Range: Indian range, as listed above.

Taphozous melanopogon Temminck, 1841 Black-bearded Tomb Bat

Approximate distribution of species: Java, Malay States, Sumatra, Borneo (probably represented in Philippine Islands), Laos, in Indo-China, Tenasserim, Burma, also widely distributed in Peninsula of India, south at least to Western Ghats; Yunnan, China.

Taphozous melanopogon melanopogon Temminck, 1841

1841. *Taphozous melanopogon* Temminck, Mon. Mamm. *2:* 287. Bantam, Western Java. Range: Java, also Indian localities as above, Yunnan and Laos.

1841. *Taphozous bicolor* Temminck, *loc. cit.* 290. India.

(?) 1913. *Taphozous solifer* Hollister, Proc. Biol. Soc. Washington, *26:* 157. Thought to be from Pekin, Chihli, China. See G. Allen, 1938, Mamm. China & Mongolia, *1:* 160, for a note on this form. Allen thought there was a mistake in the locality and that it probably came from some more tropical locality, perhaps the Philippines. It was said to be very close to *T. philippinensis*, Waterhouse, 1845, which probably represents *melanopogon*.

Taphozous theobaldi Dobson, 1872

Approximate distribution of species: Tenasserim; Nimar (Central Provinces district, India); Indo-China (Bourret, 1944); Malay States; Java.

Taphozous theobaldi theobaldi Dobson, 1872

1872. *Taphozous theobaldi* Dobson, Proc. Asiat. Soc. Bengal, 152. Tenasserim.

Taphozous theobaldi secatus Thomas, 1915

1915. *Taphozous theobaldi secatus* Thomas, J. Bombay N.H. Soc. *24:* 60. Asirgarh, Nimar, Central Provinces, India.

Subgenus *LIPONYCTERIS* Thomas, 1922

Taphozous nudiventris Cretzschmar, 1830 *vel* 1831 Naked-bellied Tomb Bat

Approximate distribution of species: Palestine, Arabia; Egypt; Sudan.

Taphozous nudiventris Cretzschmar, 1830 *vel* 1831

1830 *vel* 1831. *Taphozous nudiventris* Cretzschmar in Rüppell, Atlas Reise Nördl. Afrika, Säugeth. 70, fig. 27b. Giza, Egypt.

1841. *Taphozous nudiventer* Temminck, Mon. Mamm. *2:* 280.

Taphozous kachhensis Dobson, 1872

Approximate distribution of species: India, from Sind, Cutch, Palanpur, Kathiawar, also parts of the Peninsula (Bellary, Mysore, Khandesh); Bengal and Sikkim; Burma; Malay States; Iraq.

TAPHOZOUS KACHHENSIS KACHHENSIS Dobson, 1872

1872. *Taphozous kachhensis* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 221. Cutch, India. Range: Indian range, as above, excluding Burma.

TAPHOZOUS KACHHENSIS MAGNUS Wettstein, 1913

1913. *Taphozous magnus* Wettstein, Ann. Naturh. (Mus.) Hofmus. Wien, *27:* 466, pl. xx, figs. 1–6. Basra, Euphrates, Iraq.

1915. *Taphozous kachhensis babylonicus* Thomas, J. Bombay N.H. Soc. *24:* 58. Euphrates River, Iraq.

TAPHOZOUS KACHHENSIS NUDASTER Thomas, 1915

1915. *Taphozous kachhensis nudaster* Thomas, J. Bombay N.H. Soc. *24:* 59. Pagan, near Mt. Popa, Burma.

Subgenus *SACCOLAIMUS* Lesson, 1842

Taphozous saccolaimus Temminck, 1838 Pouch-bearing Bat

Approximate distribution of species: Ceylon, Peninsula of India, to Bengal, perhaps Burma; Malay States, Sumatra, Java.

(TAPHOZOUS SACCOLAIMUS SACCOLAIMUS Temminck, 1838. Extralimital)

1838. *Taphozous saccolaimus* Temminck, Tijdschr. Natuur. Gesch. *5:* 14. Java.

TAPHOZOUS SACCOLAIMUS CRASSUS Blyth, 1844

1844. *Taphozous crassus* Blyth, J. Asiat. Soc. Bengal, *13:* 491. Mirzapore, Allahabad, United Provinces, India.

(?) 1844 *Taphozous pulcher* Blyth, J. Asiat. Soc. Bengal, *13:* 492. Madras, India.

Range: Mainland range as above, and Sumatra.

FAMILY NYCTERIDAE

Genus: *Nycteris*, page 106

Genus **NYCTERIS** Cuvier & Geoffroy, 1795

1795. *Nycteris* Cuvier & Geoffroy, Mag. Encyclop. *2:* 186, *nom. nud. Vespertilio hispidus* Schreber. Name validated by Opinion 111 of International Commission on Zoological Nomenclature.

1803. *Nicteris* Desmarest, Nouv. Dict. H.N. *15:* 501.

1838. *Petalia* Gray, Mag. Zool. Bot. *2:* 494. *Nycteris javanicus* Geoffroy.

1866. *Nycterops* Gray, P.Z.S. 83. *Nycterops pilosa* Gray = *Vespertilio hispidus* Schreber.

2 species in the area covered by this list:

Nycteris javanica, page 107
Nycteris thebaica, page 107

On this genus see Andersen, 1912, *Ann. Mag. N.H. 10:* 546; Dobson, 1878, *Cat. Chiroptera B.M.* 162 (key to species); Tate, 1941, *Amer. Mus. Nov.* No. 1140, 7.

The first named species in this genus is apparently *N. hispida* Schreber, 1774, from Senegal, which is described as having relatively shorter ears than the two species which come into the region now under discussion. Dobson distinguishes these two principally by the fact that in *N. javanica* the second lower premolar is two-thirds the size of the first and lies in the toothrow, whereas in *N. thebaica* the tooth is minute, and is internal to the toothrow; and by the shape of the tragus.

Nycteris javanica Geoffroy, 1813 — Javan Slit-faced Bat

Approximate distribution of species: Tenasserim, Malay States, Java, Borneo, Timor.

(Nycteris javanica javanica E. Geoffroy, 1813. Extralimital)

1813. *Nycteris javanicus* Geoffroy, Ann. Mus. N.H. Paris, *20:* 20. Java.

Nycteris javanica tragata Andersen, 1912

1912. *Petalia tragata* Andersen, Ann. Mag. N.H. *10:* 546. Bidi Caves, Sarawak, Borneo. Range includes Malay States and Tenasserim.

Nycteris thebaica Geoffroy, 1818 — Egyptian Slit-faced Bat

Approximate distribution of species: recorded from the Island of Corfu (Greece) and Palestine; Arabia; Egypt, Sudan, Kenya, Angola.

Nycteris thebaica thebaica Geoffroy, 1818

1818. *Nycteris thebaicus* E. Geoffroy, Description de l'Egypte, *2:* 119, pl. 1, No. 2. Egypt.

1840. *Nycteris albiventer* Wagner, Schreb. Säugeth. Suppl. *1:* 439. Nubia, Sudan. Recorded from Palestine as a valid race by Aharoni, 1944, Bull. Zool. Soc. Egypt, *6:* 26.

Range: Egypt, Palestine, Corfu, Northern Arabia.

Nycteris thebaica adana Andersen, 1912

1912. *Petalia thebaica adana* Andersen, Ann. Mag. N.H. *10:* 548. Myba, near Aden, Southern Arabia.

FAMILY MEGADERMATIDAE

Genus: *Megaderma*, page 108

Genus **MEGADERMA** E. Geoffroy, 1810

1810. *Megaderma* Geoffroy, Ann. Mus. H.N. Paris, *15*: 190. *Vespertilio spasma* Linnaeus.
1847. *Eucheira* Hodgson, J. Asiat. Soc. Bengal, *16:* 891. *Megaderma schistacea* Hodgson = *Megaderma lyra* Geoffroy. Not of Westwood, 1836.
1866. *Spasma* Gray, P.Z.S. 83. *Vespertilio spasma* Linnaeus.
1872. *Lyroderma* Peters, Mber. Preuss. Akad. Wiss. 195. *Megaderma lyra* Geoffroy. Valid as a subgenus.

2 species: *Megaderma lyra*, page 109
Megaderma spasma, page 108

We follow Chasen and Simpson in regarding *Lyroderma* as of subgeneric rather than generic value. The two species differ in the shape of the noseleaf and also in the width of the skull; excellent figures are given in Dobson (1878, pl. 10).

Subgenus *MEGADERMA* Geoffroy, 1810

Megaderma spasma Linnaeus, 1758 — Malay False Vampire

Approximate distribution of species: Ceylon, Peninsula of India, Burma, Tenasserim, Cambodia (Indo-China), Siam, Malay States, Sumatra, Java, Borneo, and various small adjacent islands, Celebes, Philippine Islands, Ternate (Moluccas).

(MEGADERMA SPASMA SPASMA Linnaeus, 1758. Extralimital)
1758. *Vespertilio spasma* Linnaeus, Syst. Nat. ed. 10, *1*: 32. Ternate.

MEGADERMA SPASMA HORSFIELDI Blyth, 1863
1863. *Megaderma horsfieldii* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 23. India. Range: Peninsula of India.

MEGADERMA SPASMA MEDIUM Andersen, 1918
1918. *Megaderma spasma medium* Andersen, Ann. Mag. N.H. *2:* 383. Singapore Island. (Ranges to Tenasserim.)

MEGADERMA SPASMA MAJUS Andersen, 1918
1918. *Megaderma spasma majus* Andersen, Ann. Mag. N.H. *2:* 383. Kin, Lower Chindwin, Burma.

MEGADERMA SPASMA MINUS Andersen, 1918
1918. *Megaderma spasma minus* Andersen, Ann. Mag. N.H. *2:* 383. Cambodia, Indo-China. Range includes Siam.

MEGADERMA SPASMA CEYLONENSE Andersen, 1918
1918. *Megaderma spasma ceylonense* Andersen, Ann. Mag. N.H. *2:* 384. Trincomalee, Ceylon.

Subgenus *LYRODERMA* Peters, 1872

Megaderma lyra Geoffroy, 1810 Indian False Vampire

Approximate distribution of species: Szechuan, Kwantung, Fukien, etc., in Southern China; India, including Bengal, Palanpur, Sikkim, Bhutan Duars, several localities in the Peninsula, south at least to Mysore and Western Ghats (Blanford gave Kashmir to Cape Comorin and Ceylon, west to Karachi); Shan States, Burma; Malay States.

MEGADERMA LYRA LYRA Geoffroy, 1810

1810. *Megaderma lyra* E. Geoffroy, Ann. Mus. H.N. Paris, *15:* 190. India. (? East coast, Madras.)

1839. *Vespertilio* (*Megaderma*) *carnatica* Elliot, Madras J. Lit. *10:* 96. Dharwar, Southern Mahratta, India.

1844. *Megaderma spectrum* Wagner, in Hügels Kashmir, 569, pl. Kashmir.

1847. *Megaderma schistacea* Hodgson, J. Asiat. Soc. Bengal, *16:* 889. North-Eastern Bengal, India.

Range: Burma, Bhutan Duars, Sikkim, Bengal, Kumaon, Palanpur, Khandesh, Central Provinces, Bellary, Mysore (India).

MEGADERMA LYRA SINENSIS Andersen & Wroughton, 1907

1907. *Eucheira sinensis* Andersen & Wroughton, Ann. Mag. N.H. *19:* 136. Amoy, Fukien, China.

1930. *Megaderma spasma* Shih, Bull. Biol. Dept. Sun. Yat-sen Univ. 9, 1. Not of Linnaeus, 1758. (South-Western border of Hunan, China.)

Range: Chinese range of species as above, and Malay States.

MEGADERMA LYRA CAURINA Andersen & Wroughton, 1907

1907. *Eucheira lyra caurina* Andersen & Wroughton, Ann. Mag. N.H. *19:* 136. Surat district, India. Range includes Dharwar, Kanara and Western Ghats, Peninsular India.

FAMILY RHINOLOPHIDAE

Genera: *Asellia*, page 130
Aselliscus, page 130
Coelops, page 131
Hipposideros, page 123
Rhinolophus, page 111
Triaenops, page 131

Of these genera, all but *Rhinolophus* belong to the subfamily Hipposiderinae, which Miller, 1907, *Families & Genera of Bats*, made a distinct family. The two groups are closely allied and frequently referred, as here, to a single family.

Subfamily Rhinolophinae

Genus **RHINOLOPHUS** Lacepède, 1799

1799. *Rhinolophus* Lacepède, Tabl. Mamm. 15. *Vespertilio ferrum-equinum* Schreber.
1836. *Rhinocrepis* Gervais, Dict. Pittoresque H.N. *4*, 2: 617. *Vespertilio ferrum-equinum* Schreber.
1847. *Aquias* Gray, P.Z.S. 15. *Rhinolophus luctus* Temminck and *Rhinolophus trifoliatus* Temminck.
1866. *Phyllotis* Gray, P.Z.S. 81. Not of Waterhouse, 1837. *Rhinolophus philippinensis* Waterhouse.
1867. *Coelophyllus* Peters, P.Z.S. *1866*: 427. *Rhinolophus coelophyllus* Peters.
1901. *Euryalus* Matschie, S.B. Ges. Naturf. Fr. Berlin, 225. *Rhinolophus mehelyi* Matschie.
1934. *Rhinophyllotis* Iredale & Troughton, Mem. Austral. Mus. *6:* 92. *Rhinolophus megaphyllus* Gray, from Australia. (Nom. nud.)

The most recent reviews of part of this very large genus are Tate, 1939, *Amer. Mus. Nov.* No. 1036, and 1943, *Amer. Mus. Nov.* No. 1219. These papers deal with the Oriental members of the genus, and slightly modify the arrangements of Andersen, 1905, *Ann. Mag. N.H. 16:* 243, 281, 289 and 648; 1905, *P.Z.S. 2:* 75, 121; and 1918, *Ann. Mag. N.H. 2:* 374. Andersen recognized six groups of species in *Rhinolophus*, one of which appears to be extralimital, and one of which, the *macrotis* group, Tate apparently merges with the *luctus* group. We entirely agree with Tate that the "*simplex*" group of Andersen (later called "*megaphyllus*" group) must be called the *ferrumequinum* group; the last is the type species and much the earliest name in the genus.

In the present region, the following 21 species seem most likely to prove valid:

Rhinolophus acrotis, page 113
Rhinolophus affinis, page 113
Rhinolophus blasii, page 120
Rhinolophus clivosus, page 112
Rhinolophus coelophyllus, page 123
Rhinolophus cornutus, page 117
Rhinolophus curyale, page 119
Rhinolophus ferrumequinum, page 111
Rhinolophus hipposideros, page 115
Rhinolophus lepidus, page 118
Rhinolophus luctus, page 121
Rhinolophus macrotis, page 122
Rhinolophus malayanus, page 115
Rhinolophus mehelyi, page 120
Rhinolophus monoceros, page 119
Rhinolophus pearsoni, page 122
Rhinolophus rex, page 123
Rhinolophus rouxi, page 114
Rhinolophus subbadius, page 119
Rhinolophus thomasi, page 114
Rhinolophus trifoliatus, page 121

Rhinolophus ferrumequinum group

Tate (1939) lists four subgroups which come into the region now under discussion, typified by *ferrumequinum*, *affinis*, *rouxi* and *borneensis* (*Rhinolophus borneensis* Peters, 1861, *Mber. Preuss. Akad. Wiss.* 709, Labuan, North Borneo). In the present region, of the species listed above only *R. malayanus* belongs to the *borneensis* subgroup; Osgood recorded this species from Indo-China. The two principally Ethiopian species, *R. clivosus* and *R. acrotis*, are nearest *ferrumequinum*, and *R. thomasi* is near *rouxi*.

Rhinolophus ferrumequinum Schreber, 1774 Greater Horseshoe Bat

Approximate distribution of species: England, France, Spain and Portugal, Italy, Switzerland, Holland, Germany, Hungary, Greece, Corsica and Sardinia; Crimea, Caucasus, Russian Turkestan; Japan, Korea, China (states of Chihli, Shantung, Shensi, Szechuan, Yunnan, Fukien); Asia Minor, Persia, Syria, Palestine; Kashmir, Kumaon, Nepal, Sikkim; Algeria, Morocco.

RHINOLOPHUS FERRUMEQUINUM FERRUMEQUINUM Schreber, 1774

1774. *Vespertilio ferrum-equinum* Schreber, Säugeth, *1:* pl. 62, upper figs. (text, p. 174). France.
1776. *Vespertilio equinus* Müller, Natursyst. Suppl. Regist. Band, 20. France.
1777. *Vespertilio solea* Zimmermann, Spec. Zool. Geogr. Quad, 452. Not available, see Bull. Zool. Nomencl. *4*, 1950: 547.
1779. *Vespertilio perspicillatus* Blumenbach, Handb. Naturgesch. 75 (part).
1785. *Vespertilio ungula* Boddaert, Elench. Anim. *1:* 71. Burgundy, France.
1792. *Vespertilio ferrum-equinum major* Kerr, Anim. Kingd. 99. Not of Kerr, *loc. cit.* 97. France.
1798. *Vespertilio hippocrepis* Schrank, Fauna Boica, *1:* 64. Renaming of *ferrum-equinum.*
1813. *Rhinolophus unihastatus* Geoffroy, Ann. Mus. H.N. Paris, *20:* 257. France.
(?) 1829. *Rhinolophus unifer* Kaup, Skizz. Europ. Thierw. *1:* 104, *nom. nud.*
1863. *Rhinolophus ferrum-equinum* var. *germanicus* Koch, Jb. Nassau Ver. Naturk. *18:* 522. Wiesbaden, Germany.
1863. *Rhinolophus ferrum-equinum* var. *italicus* Koch, *loc. cit.* 523. Italy.
1885. *Rhinolophus unihastatus* var. *homorodalmasiensis* Daday, Orv. Term. Ert. Kolosvar, *10:* 274. Homorod-Almas Caves, Hungary.
1887. *Rhinolophus unihastatus* var. *homodorensis* Daday, Ert. Term. Köréböl, Budapest, *16*, 7: 13. Renaming of *homorodalmasiensis.*
1904. *Rhinolophus ferrum-equinum obscurus* Cabrera, Mem. Soc. Esp. H.N. *2:* 257. Valencia, Spain.
1905. *Rhinolophus ferrum-equinum typicus* Andersen, P.Z.S. *1905*, 2: 113.
1911. *Rhinolophus ferrum-equinum colchicus* Satunin, Izv. Kauk. Otd. Russ. Geog. Obsc. *21:* 47–48. (*N.V.*) Abkhazia (Southern Russia). (Satunin, 1914, Mitt. Kaukas. Mus. *8:* 89.)

Range: Continental Europe, as listed above, eastwards to Russia; Algeria. (The form *obscurus* is recognized as valid by Andersen and by G. Allen (1939), from Spain, Balearic Islands, Algeria, Morocco.)

RHINOLOPHUS FERRUMEQUINUM NIPPON Temminck, 1835

1835. *Rhinolophus nippon* Temminck, Mon. Mamm. *2:* 30a. Japan. Range includes Fukien, Shantung, Szechuan, etc., in China; Hokkaido, Hondo, Shikoku Kiushiu, Tsushima, ? Riukiu Islands, Japan.

RHINOLOPHUS FERRUMEQUINUM TRAGATUS Hodgson, 1835

1835. *Rhinolophus tragatus* Hodgson, J. Asiat. Soc. Bengal, *4:* 699. Nepal.
1863. *Rhinolophus brevitarsus* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 24, *nom. nud.* Range includes Sikkim; and Yunnan, China.

Rhinolophus ferrumequinum proximus Andersen, 1905

1905. *Rhinolophus ferrum-equinum proximus* Andersen, P.Z.S. *1905*, 2: 112. Gilgit, Kashmir.

Rhinolophus ferrumequinum regulus Andersen, 1905

1905. *Rhinolophus ferrum-equinum regulus* Andersen, P.Z.S. *1905*, 2: 112. Mussoorie, Kumaon, Northern India.

Rhinolophus ferrumequinum insulanus Barrett-Hamilton, 1910

1910. *Rhinolophus ferrum-equinum insulanus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 292. Cheddar, Somersetshire, England.

Rhinolophus ferrumequinum irani Cheesman, 1921

1921. *Rhinolophus ferrum-equinum irani* Cheesman, J. Bombay N.H. Soc. *27:* 35. Shiraz, 5,200 ft., Persia.

Rhinolophus ferrumequinum mikadoi Ognev, 1927

1927. *Rhinolophus ferrum-equinum mikadoi* Ognev, J. Mamm. *8:* 142. Yokohama, Hondo, Japan.

Rhinolophus ferrumequinum quelpartis Mori, 1933

1933. *Rhinolophus quelpartis* Mori, J. Chosen N.H. Soc. *16:* 1, 4. Ki-nei, Quelpart Island, off Korea.

Rhinolophus ferrumequinum korai Kuroda, 1938

1938. *Rhinolophus ferrumequinum korai* Kuroda, List Jap. Mamm. 91 (in full, 92). Southern Korea.

1931. *Rhinolophus nippon pachyodontus* Kishida & Mori, Zool. Mag. Tokyo, 43, 379, *nom. nud.* Korea.

Rhinolophus bocharicus Kastschenko & Akimov, 1917

1917. *Rhinolophus bocharicus* Kastschenko & Akimov, Annu. Mus. Zool. Acad. St. Pétersb. *22:* 221. Murghab River, South Russian Turkestan. Considered a subspecies of *R. ferrumequinum* by Ognev, 1928, Mamm. of E. Europe, N. Asia, *1:* 397; but Kuzyakin, in Bobrinskii (1944), lists it as a full species, from South-Eastern Turkmenia, districts of Tashkent, Samarkand, near Kokand, and district of Termez, migrating to Afghanistan in the winter.

Rhinolophus clivosus Cretzschmar, 1828

Approximate distribution of species: Red Sea coasts of Arabia and African coast of Gulf of Aden.

Rhinolophus clivosus Cretzschmar, 1828

1828. *Rhinolophus clivosus* Cretzschmar, in Ruppell, Atlas Reise Nördl. Afrika, Saugeth. 47. Mohila, Red Sea coast, approximately 27°49′ N., 35°30′ E., Arabia.

Rhinolophus acrotis Heuglin, 1861

Approximate distribution of species: Egypt, Southern Arabia, Eritrea, the Sahara (in part). (B.M. specimens of this species from Hadramaut, Southern Arabia, and from Yemen, South-Western Arabia.)

(Rhinolophus acrotis acrotis Heuglin, 1861. Extralimital)

1861. *Rhinolophus acrotis* Heuglin, Nova Acta Leop. Carol. *29*, 8: 4, 10. Keren, Eritrea.

Rhinolophus acrotis andersoni Thomas, 1904

1904. *Rhinolophus andersoni* Thomas, Ann. Mag. N.H. *14:* 156. Eastern Desert of Egypt, about 22° N., 35° E.

Rhinolophus acrotis brachygnathus Andersen, 1905

1905. *Rhinolophus acrotis brachygnathus* Andersen, Ann. Mag. N.H. *15:* 73. Giza, Egypt.

Rhinolophus acrotis schwarzi Heim de Balsac, 1934

1934. *Rhinolophus acrotis schwarzi* Heim de Balsac, Bull Mus. H.N. Paris, *7:* 483. Djanet, Tassali des Azdjers, about 24°40′ N., 9°25′ E., Algerian Sahara.

Rhinolophus affinis Horsfield, 1823

Approximate distribution of species: Southern China (Szechuan, Yunnan, Fukien, Chekiang, etc.), Hainan; Kumaon, Nepal, Bhutan Duars, Darjeeling, Burma (from Pegu to Chindwin, at least); Tonkin, Indo-China; Malay States, Sumatra, Java, Natuna and Anamba Islands.

(Rhinolophus affinis affinis Horsfield, 1823. Extralimital)

1823. *Rhinolophus affinis* Horsfield, Zool. Res. Java (6), pl. figs. a, b. Java.

Rhinolophus affinis himalayanus Andersen, 1905

1905. *Rhinolophus affinis himalayanus* Andersen, P.Z.S. *1905*, 2: 103. Mussoorie, Kumaon, North-Western India. Ranges eastwards to Burma (part) and China (Hunan, Szechuan, Yunnan).

Rhinolophus affinis macrurus Andersen, 1905

1905. *Rhinolophus affinis macrurus* Andersen, P.Z.S. *1905*, 2: 103. Taho, Karennee, South-Eastern Burma. Range includes Fukien and Chekiang, Southern China and Tonkin.

Rhinolophus affinis tener Andersen, 1905

1905. *Rhinolophus affinis tener* Andersen, P.Z.S. *1905*, 2: 103. Pegu, Burma.

Rhinolophus affinis hainanus J. Allen, 1906

1906. *Rhinolophus hainanus* J. Allen, Bull. Amer. Mus. N.H. *22:* 482. Pouten, Island of Hainan.

Rhinolophus andamanensis Dobson, 1872

1872. *Rhinolophus andamanensis* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 337. South Andaman Islands, Bay of Bengal. This is very like *R. affinis* and may be a representative of it.

Rhinolophus rouxi Temminck, 1835

Approximate distribution of species: Ceylon, Peninsula of India, Nepal, Darjeeling, China (states of Szechuan, Yunnan, Fukien, Chekiang).

Rhinolophus rouxi rouxi Temminck, 1835

1835. *Rhinolophus rouxii* Temminck, Mon. Mamm. *2:* 30b. Pondicherry and Calcutta, India.

1850. *Rhinolophus rubidus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 209. Kaduganava, Ceylon.

1851. *Rhinolophus fulvidus* Blyth (error for *rubidus* Kelaart), J. Asiat. Soc. Bengal, *20:* 182.

1852. *Rhinolophus cinerascens* Kelaart, Prodr. Faunae Zeyl. 13. Fort Frederick, Ceylon.

1852. *Rhinolophus rammanika* Kelaart, *loc. cit.* 14. Amanapoora Hill, Kaduganava, Ceylon.

Range: Ceylon, Nilgiri Hills, Dharwar, Kanara, Nepal, Darjeeling, etc.

Rhinolophus rouxi sinicus Andersen, 1905

1905. *Rhinolophus rouxi sinicus* Andersen, P.Z.S. *2:* 98. Chinteh, Anhwei, Southern China. Range: Chinese range of the species.

Rhinolophus thomasi Andersen, 1905

Approximate distribution of species: Burma, Yunnan, Tonkin.

Rhinolophus thomasi thomasi Andersen, 1905

1905. *Rhinolophus thomasi* Andersen, P.Z.S. *1905*, 2: 100. Karin Hills, South-Eastern Burma.

Rhinolophus thomasi latifolius Sanborn, 1939

1939. *Rhinolophus thomasi latifolius* Sanborn, Field Mus. Publ. Zool. *24:* 39. Muong Moun, Tonkin, Indo-China.

Rhinolophus thomasi septentrionalis Sanborn, 1939

1939. *Rhinolophus thomasi septentrionalis* Sanborn, Field Mus. Publ. Zool. *24:* 40. Nguluko, 27°5′ N., 100°15′ E., north of Likiang, Yunnan, China.

Tate lists the following little-known species in the *rouxii* subgroup.

Rhinolophus petersi Dobson, 1872

1872. *Rhinolophus petersii* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 337. No locality. Perhaps from India. Blanford, 1891, listed it from Mussoorie, and Coonoor in the Nilgiri Hills.

Rhinolophus malayanus Bonhote, 1903

Approximate distribution of species: Lower Siam and Indo-China (Tonkin).

RHINOLOPHUS MALAYANUS Bonhote, 1903

1903. *Rhinolophus malayanus* Bonhote, Fasc. Malayenses, Zool. *1:* 15. Biserat, Jalor, Malay Peninsula.

Other named form:

RHINOLOPHUS CHASENI Sanborn, 1939

1939. *Rhinolophus chaseni* Sanborn, Field Mus. Publ. Zool. *24:* 38. Pulau Condor (Condor Island), off Southern Indo-China. From description, nearest *malayanus*.

Rhinolophus hipposideros group

Andersen originally called this the "*midas* group", but subsequently adopted the above name (correctly so, since *hipposideros* antedates by more than a hundred years).

Rhinolophus hipposideros Bechstein, 1800 Lesser Horseshoe Bat

Approximate distribution of species: England, Ireland, France, Spain, Portugal, Switzerland, Italy, Sardinia, Corsica, Malta, Germany, Poland, Hungary, Russia (Southern Ukraine, Caucasus); South Russian Turkestan; Asia Minor, Persia, Cyprus, Arabia; Kashmir; Morocco; Sudan, Eritrea.

RHINOLOPHUS HIPPOSIDEROS HIPPOSIDEROS Bechstein, 1800

1792. *Vespertilio ferrum-equinum minor* Kerr, Anim. Kingd. 99, not *minor* Kerr, *loc. cit.* 97. France.
1800. *Vespertilio hipposideros* Bechstein, in Pennant, Uebers. Vierf. Thiere, *2:* 629. France.
1813. *Rhinolophus bihastatus* Geoffroy, Ann. Mus. H.N. Paris, *20:* 259. Neighbourhood of Paris, France.
(?) 1816. *Phyllorhina minuta* Leach, Syst. Cat. Mamm. & Birds B.M. 5, *nom. nud.*
(?) 1829 *Rhinolophus bifer* Kaup, Skizz. Europ. Thierw. *1:* 104, *nom. nud.*
1840. *Rhinolophus bifer* Blainville, Ostéographie, *Vespertilio*, 31.
1863. *Rhinolophus hipposideros* var. *typus* Koch, Jb. Nassau Ver. Naturk, *18:* 530. Wiesbaden, Germany.
1863. *Rhinolophus hipposideros* var. *alpinus* Koch, *loc. cit.* Alps.
1870. *Rhinolophus eggenhöffner* Fitzinger, S.B. Akad. Wiss. Wien, *61*, 1: 151. MS. synonym of *bihastatus*.
1885. *Rhinolophus bihastatus* var. *kisnyiresiensis* Daday, Orv. Term. Ert. Kolozsvar, *10:* 274. Kis-Nyires, Szolnok Dobaka, Hungary.
1887. *Rhinolophus hipposideros* var. *trogophilus* Daday, Ert. Term. Köréböl, Budapest, *16*, 7: 8. Renaming of *kisnyiresiensis*.
1904. *Rhinolophus euryale helvetica* Bretscher, Vischr. Naturf. Ges. Zürich, *49:* 256. Baar, Zug, Switzerland.
1905. *Rhinolophus hipposideros typicus* Andersen, P.Z.S. *1905*, 2: 141.

RHINOLOPHUS HIPPOSIDEROS HIPPOSIDEROS [*contd.*]

(?) 1920. *Rhinolophus anomalus* Soderlund, Zool. Anz. *52:* 122. Wildbad Gastein, Salzburg, Austria.

(?) 1920. *Rhinolophus intermedius* Soderlund, *loc. cit.* 124. Wildbad Gastein, Salzburg, Austria.

(?) 1943. *Rhinolophus moravicus* Kostron, Acta Soc. Sci. Nat. Moravia, Brno, *15*, 9: 13. Moravia, Czechoslovakia. See also Kostron, 1946, Casopis Vlast. Spolkn. Mus. Olmutz, *55:* 1–11.

(?) 1943. *Rhinolophus hipposideros intermedius* Laurent, Bull. Soc. Z. France, *68:* 188. Not of Soderlund, 1920. Geneva, Switzerland.

Range: Continental Europe, north of the Alps, through Armenia to North-Western Persia.

RHINOLOPHUS HIPPOSIDEROS MINUTUS Montagu, 1808

1808. *Vespertilio minutus* Montagu, Trans. Linn. Soc. London, *9:* 163. Wiltshire, England. Ranges to Ireland.

RHINOLOPHUS HIPPOSIDEROS MINIMUS Heuglin, 1861

1861. *Rhinolophus minimus* Heuglin, Nova Acta Leop. Carol. *29*, 8: 6. Keren, Eritrea, North-Eastern Africa.

1863. *Rhinolophus hipposideros* var. *pallidus* Koch, Jb. Nassau Ver. Naturk. *18:* 531. Mediterranean region.

1904. *Rhinolophus phasma* Cabrera, Mem. Soc. Esp. H.N. *2:* 252. Madrid, Spain.

Range: Mediterranean region (quoted by Miller from Spain, Portugal, France, Switzerland, Italy, Corsica, Sardinia, Malta, Cyprus); also Eritrea and Senaar, Sudan (G. Allen); recorded from Arabia (Taif) by Morrison-Scott (1939).

RHINOLOPHUS HIPPOSIDEROS MIDAS Andersen, 1905

1905. *Rhinolophus midas* Andersen, *1905*, 2: 138. Jask, Persian Gulf. Range: Gilgit to Cyprus, according to Andersen (1918), who appears to treat this form as a subspecies in his key (p. 378) where its status, and that of the other named forms recognized, seems not very clear.

RHINOLOPHUS HIPPOSIDEROS MAJORI Andersen, 1918

1918. *Rhinolophus hipposideros majori* Andersen, Ann. Mag. N.H. *2:* 377, 378. Patrimonio, Northern Corsica.

RHINOLOPHUS HIPPOSIDEROS ESCALERAE Andersen, 1918

1918. *Rhinolophus hipposideros escalerae* Andersen, Ann. Mag. N.H. *2:* 378. Ha-ha, Mogador, Morocco.

RHINOLOPHUS HIPPOSIDEROS VESPA Laurent, 1937

1937. *Rhinolophus hipposideros vespa* Laurent, Bull. Soc. H N. Afr. N. *28:* 157 Korifla, Morocco.

Rhinolophus pusillus group

Andersen first called this the "*lepidus* group" (1995), subsequently the *pusillus* group. Tate prefers the first, and lists one of its subgroups as the "*minor* subgroup".

But *minor* Horsfield, 1823, from Java, is preoccupied by *minor* Kerr, 1792 = *hipposideros*, and so cannot be used in this group. *R. pusillus* Temminck, 1834, is the next available name for *minor* Horsfield (*nec* Kerr) and appears to be the earliest name in the group. The type locality for *pusillus* is Java, and we believe this species to be wholly extralimital to our list, notwithstanding the fact that under the name "*minor*" it was listed by earlier authors from Darjeeling and Siam. The few skins examined from Java are all unusually dark in colour and easily distinguished from such species as *cornutus* or *blythi*, which represent the group on the mainland, and the latter of which is likely to occur in Darjeeling and Siam. But we suggest that there is very little evidence that *blythi* is in reality a species distinct from *cornutus*, as we suspect the dental details given by Andersen to separate *blythi* may not be constant, and there is no difference in size (as judged by forearm length) between the two supposed species when all races are taken into account.

Tate divided the Oriental members of this group into three subgroups, typified by *pusillus* ("*minor*"), *lepidus* and *subbadius*, and in addition to these, the three well-known European species, *blasii*, *euryale* and *mehelyi* belong here. These have been compared with the Oriental species by Andersen. *R. monoceros* belongs to the *subbadius* subgroup.

The reference of *R. pusillus* is Temminck, 1834, *Tijdschr. Nat. Gesch. Phys. 1:* 29 (Java).

Rhinolophus cornutus Temminck, 1835 Little Japanese Horseshoe Bat

Approximate distribution of species: Japan; Liukiu Islands; Szechuan, Fukien, Kwantung, Hainan, etc., in China; Indo-China; Siam; Kumaon, India; and Burma.

Rhinolophus cornutus cornutus Temminck, 1835

1835. *Rhinolophus cornutus* Temminck, Mon. Mamm. *2:* 37. Japan. Range includes Hokkaido, Hondo, Shikoku, Kiushiu, Iki Islands, Tsushima.

Rhinolophus cornutus pumilus Andersen, 1905

1905. *Rhinolophus cornutus pumilus* Andersen, P.Z.S. *1905*, 2: 127. Okinawa, Liukiu Islands. Range includes Szechuan and Kwantung, China.

Rhinolophus cornutus perditus Andersen, 1918

1918. *Rhinolophus perditus* Andersen, Ann. Mag. N.H. *2:* 376. Ishigaki, Southern Liukiu Islands.

Rhinolophus cornutus blythi Andersen, 1918

1918. *Rhinolophus blythi* Andersen, Ann. Mag. N.H. *2:* 376, 377. Almora, 5,500 ft., Kumaon, Northern India.

Rhinolophus cornutus szechwanus Andersen, 1918

1918. *Rhinolophus blythi szechwanus* Andersen, Ann. Mag. N.H. *2:* 376, 377. Chunking, Szechuan, China. Range: Szechuan, Hupeh, Yunnan, Burma, Darjeeling, Siam.

Rhinolophus cornutus calidus G. Allen, 1923

1923. *Rhinolophus blythi calidus* G. Allen, Amer. Mus. Nov. No. 85: 1. Yenping, Fukien, South-Eastern China. Ranges to Tonkin, Indo-China.

Rhinolophus cornutus orii Kuroda, 1924

1924. *Rhinolophus cornutus orii* Kuroda, New Mamm. Riukiu Islands, 4. San-Mura, Tokunoshima, 300 ft., Liukiu Islands.

Rhinolophus cornutus miyakonis Kuroda, 1924

1924. *Rhinolophus miyakonis* Kuroda, New. Mamm. Riukiu Islands, 5. Nishisato, Miyakojima, Liukiu Islands.

Rhinolophus cornutus parcus G. Allen, 1928

1928. *Rhinolophus blythi parcus* G. Allen, Amer. Mus. Nov. No. 317: 2. Nodoa, Island of Hainan.

Andersen regards the following member of the *pusillus* subgroup as a distinct species:

Rhinolophus gracilis Andersen, 1905

1905. *Rhinolophus gracilis* Andersen, P.Z.S. *2:* 129. Malabar coast, India.

Rhinolophus lepidus Blyth, 1844

Approximate distribution of species: Szechuan and Yunnan, China; Central Provinces, Ganges Valley, Kumaon, Bengal, etc., in India; Mt. Popa, Pagan and Chindwin River, Burma.

Rhinolophus lepidus lepidus Blyth, 1844

1844. *Rhinolophus lepidus* Blyth, J. Asiat. Soc. Bengal, *13:* 486. ? Calcutta. Range: India, as above.

Rhinolophus lepidus shortridgei Andersen, 1918

1918. *Rhinolophus lepidus shortridgei* Andersen, Ann. Mag. N.H. *2:* 376, 377. Pagan, Burma. Range includes Chindwin, Burma; also Szechuan and Yunnan, China.

The following species, probably belonging to the *lepidus* subgroup, have also been named:

Rhinolophus monticola Andersen, 1905

1905. *Rhinolophus monticola* Andersen, P.Z.S. *1905*, 2: 124. Mussoorie, Kumaon, North-Western India.

Rhinolophus feae Andersen, 1907

1907. *Rhinolophus feae* Andersen, Ann. Mus. Stor. Nat. Genova, *3:* 474. Biapo, Karin Hills, Burma.

Rhinolophus osgoodi Sanborn, 1939

1939. *Rhinolophus osgoodi* Sanborn, Field Mus. Publ. Zool. *24:* 40. Nguluko, 27°5′ N., 100°15′ E., north of Likiang, Yunnan, China.

Tate lists the following in the *lepidus* subgroup, but according to Andersen's key (1918) they belong to the *garoensis* (= *subbadius*) subgroup.

Rhinolophus cognatus cognatus Andersen, 1906

1906. *Rhinolophus cognatus* Andersen, Ann. Mus. Stor. Nat. Genova, 3, *2:* 181. Port Blair, South Andaman Islands, Bay of Bengal.

Rhinolophus (?) cognatus famulus Andersen, 1918

1918. *Rhinolophus famulus* Andersen, Ann. Mag. N.H. *2:* 377. North Central Island, Andaman Islands, Bay of Bengal.

Rhinolophus subbadius Blyth, 1844

Approximate distribution of species: Nepal, United Provinces (India) and Assam; Tonkin, Indo-China.

Rhinolophus subbadius Blyth, 1844

1841. *Rhinolophus subbadius* Hodgson, J. Asiat. Soc. Bengal, *10:* 908, *nom. nud.*
1844. *Rhinolophus subbadius* Blyth, J. Asiat. Soc. Bengal, *13:* 486. Nepal.
1872. *Rhinolophus garoensis* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 337. Garo Hills, Assam. Andersen (1918) lists *garoensis* as a valid form, but does not compare it with *subbadius*. Wroughton listed it as a synonym.

Rhinolophus monoceros Andersen, 1905

Distribution: Formosa.

Rhinolophus monoceros Andersen, 1905

1905. *Rhinolophus monoceros* Andersen, P.Z.S. *1905*, 2: 131. Baksa, Formosa.

Rhinolophus euryale Blasius, 1853 Mediterranean Horseshoe Bat

Approximate distribution of species: Portugal, Spain, France, Italy, Sardinia, Austria, Yugoslavia, Greece; south-east coast of Black Sea, Caucasus, and South-West Russian Turkestan (Turkmenia); Syria, Palestine (Asia Minor, according to Kuzyakin); Morocco, Algeria, Egypt.

Rhinolophus euryale euryale Blasius, 1853

1853. *Rhinolophus euryale* Blasius, Arch. Naturgesch. *19*, 1: 49. Milan, Italy.
1904. *Euryalus toscanus* Andersen & Matschie, S.B. Ges. Naturf. Fr. Berlin, 77. Caverna di Parignana, Mt. Pisani, Italy.
1904. *Euryalus atlanticus* Andersen & Matschie, *loc. cit.* St. Paterne, Indre-et-Loire, France.
1904. *Euryalus cabrerae* Andersen & Matschie, *loc. cit.* 78. Alcalá de Henares, Madrid, Spain.

RHINOLOPHUS EURYALE BARBARUS Andersen & Matschie, 1904

1904. *Euryalus barbarus* Andersen & Matschie, S.B. Ges. Naturf. Fr. Berlin, 79. Tangiers, Morocco.

?1867. *Rhinolophus algirus* Loche, Expl. Sci. de l'Algérie, Zool. Mamm. 83. Algeria. Ranges eastwards to Tunis.

RHINOLOPHUS EURYALE MERIDIONALIS Andersen & Matschie, 1904

1904. *Euryalus meridionalis* Andersen & Matschie, S.B. Ges. Naturf. Fr. Berlin, 79. Algeria ("probably a mountain form").

RHINOLOPHUS EURYALE JUDAICUS Andersen & Matschie, 1904

1904. *Euryalus judaicus* Andersen & Matschie, S.B. Ges. Naturf. Fr. Berlin, 80. Cave of Adullam, Jerusalem, Palestine. Range: to Egypt.

RHINOLOPHUS EURYALE NORDMANNI Satunin, 1911

1911. *Rhinolophus euryale nordmanni* Satunin, Izv. Kavkaz. Otd. R.G.O. *21:* 47. (*M.*) Pavlovsk, Sukhum district, Transcaucasia.

Rhinolophus mehelyi Matschie, 1901

Approximate distribution of species: Spain, Southern France, Sardinia, Rumania, Transcaucasia.

RHINOLOPHUS MEHELYI Matschie, 1901

1901. *Rhinolophus mehelyi* Matschie, S.B. Ges. Naturf. Fr. Berlin, 225. Bucharest, Rumania.

1904. *Rhinolophus carpetanus* Cabrera, Mem. Soc. Esp. H.N. *2:* 254. Madrid, Spain.

Rhinolophus blasii Peters, 1866

Approximate distribution of species: Greece, Cyprus, Italy (whence recorded in 1931); Palestine; Transcaucasia and Turkmenia (South-West Russian Turkestan); Asia Minor (according to Kuzyakin); North Africa (Dobson); and in G. Allen's Checklist African Mamm., but without details.

RHINOLOPHUS BLASII Peters, 1866

1857. *Rhinolophus clivosus* Blasius, Säugeth. Deutschlands, 33. Not of Cretzschmar, 1828. (Italy, Sicily, Istria, Dalmatia.)

1866. *Rhinolophus blasii* Peters, Mber. Preuss. Akad. Wiss. 17. New name for *clivosus* Blasius *nec* Cretzschmar.

1910. *Rhinolophus blasiusi* Trouessart, Faune Mamm. d'Europe, 9.

Rhinolophus luctus group

Andersen (1905) originally called this the *philippinensis* group (based on *R. philippinensis* Waterhouse, 1843, *P.Z.S.* 68, from Luzon), but later (1918) he renamed it the *luctus* group. Strictly, it should be known as the *trifoliatus* group, as *trifoliatus* antedates *luctus* by one year. However, in order not to introduce further nomenclatural

muddle, we retain the name *luctus* for the group. Tate, 1943, *Amer. Mus. Nov.* No. 1219, has considerably altered Andersen's arrangement of this group. Tate divides the group into three sections, typified by *luctus*, *trifoliatus* and *philippinensis;* to the section typified by the latter he apparently refers *macrotis*, *coelophyllus* and *rex*.

Rhinolophus trifoliatus Temminck, 1834 Trefoil Horseshoe Bat

Approximate distribution of species: Darjeeling, Tenasserim, South-Western Siam, Malay States, Sumatra, Java, Borneo, and adjacent small islands.

Rhinolophus trifoliatus trifoliatus Temminck, 1834

1834. *Rhinolophus trifoliatus* Temminck, Tijdschr. Natuur. Gesch. *1:* 24, pl. 1, fig. 6. Java.

The following very little known form is listed near *trifoliatus* by Tate, but Wroughton regarded it as unidentifiable.

Rhinolophus mitratus Blyth, 1844

1844. *Rhinolophus mitratus* Blyth, J. Asiat. Soc. Bengal, *13:* 483. Chaibassa, Orissa, India.

Rhinolophus luctus Temminck, 1835 Great Eastern Horseshoe Bat

Approximate distribution of species: Tenasserim, Burma, Nepal, Sikkim, United Provinces, Peninsular India, Ceylon; Fukien (in South-Eastern China), Hainan, and probably represented Formosa; Malay States, Sumatra, Java, Borneo.

Tate (1943) appears to regard all named forms as subspecies, but we have retained *R. pearsoni* as distinct because it seems to occur with *luctus*, and it differs from it in size.

Rhinolophus luctus luctus Temminck, 1835

1835. *Rhinolophus luctus* Temminck, Mon. Mamm. *2:* 24, pl. 30. Java. Occurs to Tenasserim, according to Wroughton; this might be the form *Rhinolophus morio* Gray, 1842, Ann. Mag. N.H. *10:* 257, from Singapore, a valid race according to Chasen (1940).

Rhinolophus luctus perniger Hodgson, 1843

1843. *Rhinolophus perniger* Hodgson, J. Asiat. Soc. Bengal, *12:* 414. Nepal. Range includes Kumaon, Sikkim; Chin Hills and Shan States, Burma.

Rhinolophus luctus lanosus Andersen, 1905

1905. *Rhinolophus lanosus* Andersen, Ann. Mag. N.H. *16:* 248. Kuatun, North-Western Fukien, China.

Rhinolophus luctus beddomei Andersen, 1905

1905. *Rhinolophus beddomei* Andersen, Ann. Mag. N.H. *16:* 253. Wynaad, Madras, India. Range: Peninsula of India.

Rhinolophus luctus sobrinus Andersen, 1918

1918. *Rhinolophus beddomei sobrinus* Andersen, Ann. Mag. N.H. *2:* 378. Kala Oya, North Central Province, Ceylon.

Rhinolophus luctus spurcus G. Allen, 1928

1928. *Rhinolophus lanosus spurcus* G. Allen, Amer. Mus. Nov. No. 317: 3. Nodoa, Island of Hainan.

Rhinolophus (?) luctus formosae Sanborn, 1939

1939. *Rhinolophus formosae* Sanborn, Field Mus. Publ. Zool. *24:* 41. Formosa.

Rhinolophus pearsoni Horsfield, 1851

Approximate distribution of species: Kumaon, Darjeeling, Assam (Dobson); Szechuan, Yunnan, Fukien, in China; Indo-China (Tonkin).

Rhinolophus pearsoni pearsoni Horsfield, 1851

1851. *Rhinolophus pearsoni* Horsfield, Cat. Mamm. Mus. E. Ind. Co. 33. Darjeeling, North-Eastern India.

1872. *Rhinolophus larvatus* Milne-Edwards, Rech. H.N. Mamm. 248, pl. 37a, fig. 1; pl. 37c, fig. 1. Not of Horsfield, 1823. Moupin, Szechuan, China.

1872. *Rhinolophus yunanensis* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 336. Hotha, Yunnan, China.

Range: as above, except Tonkin and Fukien.

Rhinolophus pearsoni chinensis Andersen, 1905

1905. *Rhinolophus pearsoni chinensis* Andersen, Ann. Mag. N.H. *16:* 289. Kuatun, Fukien, South-Eastern China. Range: to Tonkin.

Rhinolophus macrotis Blyth, 1844 Large-eared Horseshoe Bat

Approximate distribution of species: Szechuan and Fukien, China; Kumaon, Nepal; Indo-China; Sumatra; Philippine Islands (Tate).

Rhinolophus macrotis macrotis Blyth, 1844

1844. *Rhinolophus macrotis* Blyth, J. Asiat. Soc. Bengal, *13:* 485. Nepal.

Rhinolophus macrotis siamensis Gyldenstolpe, 1916

1916. *Rhinolophus macrotis siamensis* Gyldenstolpe, K. Svenska Vetensk. Akad. Handl. *57*, 2: 12. Doi Par Sakeng, North-Western Siam. Range: to Tonkin, Indo-China.

Rhinolophus macrotis episcopus G. Allen, 1923

1923. *Rhinolophus episcopus* G. Allen, Amer. Mus. Nov. No. 85: 2. Wanhsien, Szechuan, China. (Tate (1943) makes this a race of *macrotis*.)

Rhinolophus macrotis caldwelli G. Allen, 1923

1923. *Rhinolophus episcopus caldwelli* G. Allen, Amer. Mus. Nov. No. 85: 3. Yuki, Fukien, China. Range: to Tonkin, Indo-China.

Rhinolophus coelophyllus Peters, 1867

Approximate distribution of species: Burma, Siam, Malay States.

Rhinolophus coelophyllus coelophyllus Peters, 1867

1867. *Rhinolophus coelophyllus* Peters, P.Z.S. *1866:* 426, pl. 35. Salween River, Burma. (Known from Moulmein and Tsagine in Upper Burma, Malay States, and Chiengmai, Siam (Tate).)

Rhinolophus coelophyllus shameli Tate, 1943

1943. *Rhinolophus coelophyllus shameli* Tate, Amer. Mus. Nov. No. 1219: 3. Koh Chang (Island), Siam.

Rhinolophus rex G. Allen, 1923

Approximate distribution of species: Szechuan and Kweichow, China.

Rhinolophus rex G. Allen, 1923

1923. *Rhinolophus rex* G. Allen, Amer. Mus. Nov. No. 85: 3. Wanhsien, Szechuan, China.

Subfamily Hipposiderinae

Genus **HIPPOSIDEROS** Gray, 1831

1831. *Hipposideros* Gray, Zool. Misc. 37. *Vespertilio speoris* Schneider.
1837. *Phyllorhina* Bonaparte, Fauna Ital., pt. 21: 3. *Rhinolophus diadema* E. Geoffroy.
1866. *Gloionycteris* Gray, P.Z.S. 82. *Phyllorhina armiger* Hodgson.
1866. *Speorifera* Gray, P.Z.S. 82. *Hipposideros vulgaris* Blyth = *Rhinolophus larvatus* Horsfield.
1866. *Chrysonycteris* Gray, P.Z.S. 82. *Hipposideros fulvus* Gray.
1866. *Rhinophylla* Gray, P.Z.S. 82. *Phyllorhina labuanensis* Tomes. Not of Peters, 1865.
1866. *Macronycteris* Gray, P.Z.S. 82. *Rhinolophus gigas* Wagner, from Angola.
1871. *Doryrhina* Peters, Mber. Preuss. Akad. Wiss. 314. *Phyllorhina cyclops* Temminck, from the Gold Coast.
1871. *Sideroderma* Peters, Mber. Preuss. Akad. Wiss. 324. *Phyllorhina fuliginosa* Temminck, from West Africa.
1871. *Ptychorhina* Peters, Mber. Preuss. Akad. Wiss. 325. *Rhinolophus caffer* Sundevall.
1871. *Cyclorhina* Peters, Mber. Preuss. Akad. Wiss. 326. *Phyllorhina obscura* Peters, from Luzon, and *P. doriae* Peters, from Borneo.
1871. *Thyreorhina* Peters, Mber. Preuss. Akad. Wiss. 327. *Phyllorhina coronata* Peters, from Mindanao, Philippine Islands.
1871. *Synodesmotis* Peters, Mber. Preuss. Akad. Wiss. 329. *Phyllorhina megalotis* Heuglin, from Eritrea.
1888. *Hipposiderus* Blanford, P.Z.S. *1887:* 637 (Emendation).

This genus is revised in some detail by Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 353–393, who divides the genus into 11 species groups, six of which occur in the present region.

In the present region, the following 11 species seem most likely to prove valid:

Hipposideros armiger, page 128
Hipposideros bicolor, page 126
Hipposideros caffer, page 129
Hipposideros cineraceus, page 127
Hipposideros diadema, page 125
Hipposideros galeritus, page 129
Hipposideros lankadiva, page 125
Hipposideros larvatus, page 124
Hipposideros pomona, page 127
Hipposideros pratti, page 129
Hipposideros speoris, page 124

Hipposideros speoris group

H. speoris is the earliest name in the genus. Tate (1941, 377, 378) compares the two species referred here.

Hipposideros speoris Schneider, 1800 Schneider's Leaf-nosed Bat

Approximate distribution of species: Ceylon, Peninsula of India. Has also been recorded (possibly erroneously) from Java, Borneo, Timor.

Hipposideros speoris speoris Schneider, 1800

1800. *Vespertilio speoris* Schneider, in Schreber's Säugeth., pl. 59b. Tranquebar, India. (Tate, 1941, Bull. Amer. Mus. N.H. *78:* 377.)
1831. *Rhinolophus dukhunensis* Sykes, P.Z.S. 99. Deccan, India.
1838. *Hipposideros apiculatus* Gray, Mag. Zool. Bot. *2:* 492. Madras, India.
1838. *Hipposideros penicillatus* Gray, *loc. cit.* 493. Madras, India.
1850. *Hipposideros templetonii* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 208. Ceylon.
1852. *Hipposideros aureus* Kelaart, Prodr. Faun. Zeylan, 18. Ceylon.
1852. *Hipposideros blythi* Kelaart, *loc. cit.* 20.

Range: Ceylon; Dharwar, Kanara, Mysore, Coorg, etc., in Peninsular India.

Hipposideros speoris pulchellus Andersen, 1918

1918. *Hipposideros speoris pulchellus* Andersen, Ann. Mag. N.H. *2:* 383. Vijayanagar, Bellary, India.

Hipposideros larvatus Horsfield, 1823

Approximate distribution of species: Hainan; Assam, Burma; Indo-China; Malay States, Sumatra, Java, Borneo.

Hipposideros larvatus larvatus Horsfield, 1823

1823. *Rhinolophus larvatus* Horsfield, Zool. Res. Java, No. 6, pl. 9. Java. Recorded from Tonkin, Indo-China, by Osgood; Chasen, however, seems to restrict this form to Java.

Hipposideros larvatus leptophyllus Dobson, 1874

1874. *Phyllorhina leptophylla* Dobson, J. Asiat. Soc. Bengal, *43*, 2: 234. Khasi Hills, Assam.

Hipposideros larvatus poutensis J. Allen, 1906

1906. *Hipposideros poutensis* J. Allen, Bull. Amer. Mus. N. H. *22:* 483. Pouten, Island of Hainan.

Hipposideros larvatus grandis G. Allen, 1936

1936. *Hipposideros larvatus grandis* G. Allen, Rec. Ind. Mus. *38*, 3: 345. Akanti, Upper Chindwin, 500 ft., Burma. ("Not improbably a synonym of *leptophylla*" (Tate).)

Hipposideros larvatus alongensis Bourret, 1942

1942. *Hipposideros larvatus alongensis* Bourret, C. R. Conseil Rech. Sci. Indochine, *1942*, 2: 27. Bay d'Along, Indo-China.

Hipposideros diadema group

The subgeneric name *Phyllorhina* is available here, if subgeneric division is required. The two well-known species referred here are discussed by Tate (1941); see also Andersen, 1918, *Ann. Mag. N.H. 2:* 381.

Hipposideros diadema E. Geoffroy, 1813 Large Malay Leaf-nosed Bat

Approximate distribution of species: Burma, Indo-China, Malay States, Java, Sumatra, Borneo, and some adjacent small islands, Celebes, Philippine Islands; perhaps represented in New Guinea, Queensland, Solomon Islands, etc.

(Hipposideros diadema diadema E. Geoffroy, 1813. Extralimital)

1813. *Rhinolophus diadema* Geoffroy, Ann. Mus. H.N. Paris, *20:* 263, pl. 6. Island of Timor. Range includes Java.

Hipposideros diadema masoni Dobson, 1872

1872. *Phyllorhina masoni* Dobson, J. Asiat. Soc. Bengal, *41*, 2: 338. Moulmein, Burma. Range includes Annam, Indo-China.

Hipposideros lankadiva Kelaart, 1850

Approximate distribution of species: Ceylon, Peninsula of India.

Hipposideros lankadiva lankadiva Kelaart, 1850

1850. *Hipposideros lankadiva* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 216. Kandy, Ceylon.

Hipposideros lankadiva indus Andersen, 1918

1918. *Hipposideros indus* Andersen, Ann. Mag. N.H. *2:* 382. Gersoppa, Kanara, Peninsular India.

Hipposideros lankadiva mixtus Andersen, 1918

1918. *Hipposideros indus mixtus* Andersen, Ann. Mag. N.H. *2:* 382. Kolar, Eastern Mysore, India.

Hipposideros lankadiva unitus Andersen, 1918

1918. *Hipposideros indus unitus* Andersen, Ann. Mag. N.H. *2:* 382. Mundra, Sangor, Central Provinces, 1,600 ft., India.

Other named species in the *diadema* group (it is possible that *nicobarensis* represents *diadema* and that *schistaccus* represents *lankadiva*):

Hipposideros nicobarensis Dobson, 1871

1871. *Phyllorhina nicobarensis* Dobson, J. Asiat. Soc. Bengal, *40*, 2: 262. Nicobar Islands, Bay of Bengal.

Hipposideros schistaceus Andersen, 1918

1918. *Hipposideros schistaceus* Andersen, Ann. Mag. N.H. *2:* 382. Vijayanagar, Bellary, India.

Hipposideros bicolor group

Revision: Andersen, 1918, *Ann. Mag. N.H. 2:* 379. Several species are admitted, all of which seem closely allied to each other. *H. cineraceus*, the smallest in size, appears valid. Tate (1941, 363) lists *gentilis* and allied forms as races of *bicolor*, but Chasen, 1940, *Bull. Raffles Mus. 15:* 44, regards *bicolor* and *gentilis* as species occurring together. We suggest *pomona* is the earliest name for the races currently referred to *gentilis*. There seems little evidence that the Indian *fulvus* is in reality more than western subspecies of *bicolor*.

Chrysonycteris Gray is available if subgeneric division is required.

Hipposideros bicolor Temminck, 1834 Bicoloured Leaf-nosed Bat

Approximate distribution of species: Nicobar Islands, Condor Island (off Cochin-China); Lower Siam, Sumatra, Java; as here understood, also Ceylon, Peninsula of India (where widely distributed), Sind, Cutch, Rajputana, Kathiawar; Sikkim, Bhutan Duars, Burma (Chindwin to Shan States, Mt. Popa), Tenasserim; Formosa (Kuroda).

Hipposideros bicolor bicolor Temminck, 1834

1834. *Rhinolophus bicolor* Temminck, Tijdschr Natuur. Gesch. *1*, i: 19, pl. 1, fig. 3. Anjer coast, North-Western Java (Tate). Range: Condor Island, Lower Siam, Sumatra, Java.

Hipposideros (?) bicolor fulvus Gray, 1838

1838. *Hipposideros fulvus* Gray, Mag. Zool. Bot. *2:* 492. Dharwar, India.
1838. *Hipposideros murinus* Gray, Mag. Zool. Bot. *2:* 492. Madras, India.
1839. *Rhinolophus fulgens* Elliot, Madras J. Lit. *10:* 99. Dharwar, India.
1859. *Phyllorhina aurita* Tomes, P.Z.S. 76. India.

Range: Peninsula of India, as far north as Nasik, Bombay.

Hipposideros (?) bicolor ater Templeton, 1848

1848. *Hipposideros ater* Templeton, J. Asiat. Soc. Bengal, *17*, 1: 252. Colombo, Ceylon.
1850. *Hipposideros atratus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 208. Colombo, Ceylon. Substitute for *ater*.

Hipposideros bicolor nicobarulae Miller, 1902

1902. *Hipposideros nicobarulae* Miller, Proc. U.S. Nat. Mus. *24:* 781. Little Nicobar Island, Bay of Bengal.

Hipposideros (?) bicolor pallidus Andersen, 1918

1918. *Hipposideros fulvus pallidus* Andersen, Ann. Mag. N.H. *2:* 381. Junagadh, Kathiawar, India. Range: Kathiawar, Cutch, Sind, Rajputana, India.

Hipposideros pomona Andersen, 1918

Approximate distribution of species: Coorg, India, and if *gentilis* is correctly allocated here, Burma; Fukien, Yunnan, in China; Hainan, Indo-China; Siam, Malay States, islands west of Sumatra (Nias and Engano), Java, Banka.

Hipposideros pomona pomona Andersen, 1918

1918. *Hipposideros pomona* Andersen, Ann. Mag. N.H. *2:* 380, 381. Haleri, North Coorg, Southern India.

Hipposideros pomona gentilis Andersen, 1918

1918. *Hipposideros gentilis* Andersen, Ann. Mag. N.H. *2:* 380, 381. Thayetmyo, Burma. Ranges to Tonkin and Annam, in Indo-China.

Hipposideros pomona sinensis Andersen, 1918

1918. *Hipposideros gentilis sinensis* Andersen, Ann. Mag. N.H. *2:* 380, 381. Foochow, Fukien, Southern China. Range includes Yunnan and Hainan.

Hipposideros cineraceus Blyth, 1853

Approximate distribution of species: Punjab, India; Burma; Raheng, in Siam; Tonkin, in Indo-China; Malay States, Rhio Archipelago, Borneo, Anamba Islands.

Hipposideros cineraceus cineraceus Blyth, 1853

1853. *Hipposideros cineraceus* Blyth, J. Asiat. Soc. Bengal, *22:* 410. Near Pind Dadan Khan, Salt Range, Punjab. Range: as above.

Hipposideros cineraceus micropus Peters, 1872

1872. *Phyllorhina micropus* Peters, Mber. Preuss. Akad. Wiss. 256. Dehra Dun, near Simla, North-Western India.

The species *H. amboinensis* Peters, 1871, *Mber. Preuss. Akad. Wiss.* 323, from Amboina Island (Moluccas), which Tate says is probably a synonym of *aruensis* Gray, 1858, *P.Z.S.* 107, Aru Islands, off New Guinea, was recorded from parts of India by earlier authors: Blanford (1891), Dobson (1878) and Wroughton (1918). It is unlikely that an Australasian bat would occur in islands off New Guinea, India, and nowhere else. Dobson placed *micropus* in the synonymy of *amboinensis*, and it is most likely that "*amboinensis*" of the earlier writers on Indian Chiroptera is the species now called *cineraceus*.

Hipposideros armiger group

The subgeneric name *Gloionycteris* is available for this group.

Hipposideros armiger Hodgson, 1835 Great Himalayan Leaf-nosed Bat

Approximate distribution of species: Szechuan, Yunnan, Fukien and adjacent states in South-Eastern China; Formosa, Liukiu Islands; Kumaon, Nepal, Assam, Burma (Chin Hills, Shan States, Mt. Popa, etc.); Tonkin, in Indo-China; Malay States.

Hipposideros armiger armiger Hodgson, 1835

1835. *Rhinolophus armiger* Hodgson, J. Asiat. Soc. Bengal, *4:* 699. Nepal. Ranges from Kumaon to Burma, Tonkin, Yunnan and Szechuan, China.

Hipposideros armiger swinhoei Peters, 1871

1871. *Phyllorhina swinhoii* Peters, in Swinhoe, P.Z.S. *1870:* 616. Amoy, Fukien, China. Ranges to Kiangsu and Chekiang, South-Eastern China. ("Seems to be indistinguishable from *armiger*" (Tate, 1941, 390).)

Hipposideros (?) armiger turpis Bangs, 1901

1901. *Hipposideros turpis* Bangs, Amer. Nat. *35:* 561. Ishigaki, South Liukiu Islands.

Hipposideros armiger debilis Andersen, 1906

1906. *Hipposideros armiger debilis* Andersen, Ann. Mag. N.H. *17:* 37. Province Wellesley, Malay Peninsula. Perhaps extralimital to this list, but according to Tate reaches Siam.

Hipposideros armiger terasensis Kishida, 1924

1924. *Hipposideros armiger terasensis* Kishida, Zool. Mag. Tokyo, *36:* 42. Formosa. (N.V.) "Seems to be indistinguishable from *armiger*" (Tate, 1941, 390).

Hipposideros armiger tranninhensis Bourret, 1942

1942. *Hipposideros tranninhensis* Bourret, C.R. Conseil Rech. Sci. Indochine, *1942, 2:* 20. Jarres, Tran-Ninh, Indo-China.

Hipposideros galeritus group

Tate refers *H. caffer*, from Africa, to the present group, and for this the name *Ptychorhina* is available if subgeneric division is required.

Hipposideros galeritus Cantor, 1846

Approximate distribution of species: Ceylon, Bengal, Southern Bombay, Palanpur, Central India; ? Assam, ? Burma; Malay States, Sumatra, Borneo, and certain small adjacent islands.

Hipposideros galeritus galeritus Cantor, 1846

1846. *Hipposideros galeritus* Cantor, J. Asiat. Soc. Bengal, *15:* 183. Penang, Malay States. Tate, 1947, Mamm. E. Asia, quotes it from Burma and Assam.

Hipposideros galeritus brachyotus Dobson, 1874

1874. *Phyllorhina brachyota* Dobson, J. Asiat. Soc. Bengal, *43*, 2: 237. Central India. Range: Ceylon, Bengal, Kanara, Palanpur, Central India. Tate (1941, 367) suggests it is a race of *galeritus*.

Hipposideros caffer Sundevall, 1846 South African Lesser Leaf-nosed Bat

Approximate distribution of species: Morocco, and south of the Sahara, from Eritrea and Kenya, and from Gabon district, at least, southwards to South-West Africa, Natal, the Transvaal, and Pondoland in Eastern Cape Province. South-Western Arabia, vide Hayman, 1941, in *Brit. Mus. Exp. S.W. Arabia*, 1937–8, *Chiroptera*, 2.

(Hipposideros caffer caffer Sundevall, 1846. Extralimital)

1846. *Rhinolophus caffer* Sundevall, Öfvers. Vetensk. Akad. Förh. Stockholm, *3*, 4: 118. Near Durban, Natal, South Africa.

Hipposideros caffer tephrus Cabrera, 1906

1906. *Hipposideros tephrus* Cabrera, Bol. Soc. Esp. H.N. *6:* 358. Mogador, Morocco.

For notes on the characters of the *caffer* subgroup, see Tate (1941, 366).

Hipposideros pratti group

Hipposideros pratti Thomas, 1891 Pratt's Leaf-nosed Bat

Approximate distribution of species: China, states of Szechuan, Fukien, Chekiang; Shan States, in Burma; Siam; Tonkin, in Indo-China; Malay States.

Hipposideros pratti pratti Thomas, 1891

1891. *Hipposiderus* (sic) *pratti* Thomas, Ann. Mag. N.H. *7:* 527. Kiatingfu, Szechuan, China. Range: China, as above, and Tonkin.

Hipposideros pratti lylei Thomas, 1913

1913. *Hipposideros lylei* Thomas, Ann. Mag. N.H. *12:* 88. Chiengdao Cave, 50 miles north of Chiengmai, Northern Siam. Range: Burma, Siam, Malay States.

Genus **ASELLIA** Gray, 1838

1838. *Asellia* Gray, Mag. Zool. Bot. *2:* 493. *Rhinolophus tridens* Geoffroy.

The subsidiary genera of Hipposiderinae, *Asellia*, *Aselliscus*, *Triaenops*, *Coelops*, and a few others, were reviewed by Tate, 1941, *Amer. Mus. Nov.* No. 1140. *Asellia* is restricted by Tate to *A. tridens* only.

1 species: *Asellia tridens*, page 130

Asellia tridens E. Geoffroy, 1813 Trident Leaf-nosed Bat

Approximate distribution of species: Sind, India; Arabia, Iraq, Palestine; Egypt, Algeria, Morocco; southwards in Africa to Somaliland and Zanzibar. Blanford also quoted it from Southern Persia.

Asellia tridens tridens E. Geoffroy, 1813

1813. *Rhinolophus tridens* Geoffroy, Ann. Mus. H.N. Paris, *20:* 265. Egypt. Range: Egypt to Zanzibar (G. Allen).

Asellia tridens murraiana J. Anderson, 1881

1881. *Phyllorhina tridens* var. *murraiana* Anderson, Cat. Mamm. Ind. Mus. 113. Karachi, Sind, Western India.

Asellia tridens diluta K. Andersen, 1918

1918. *Asellia tridens diluta* Andersen, Ann. Mag. N.H. *2*: 379. El Golea, Algerian Sahara. Range includes Biskra, Northern Algeria.

Asellia tridens pallida Laurent, 1937

1937. *Asellia tridens pallida* Laurent, Mammalia, *1:* 111. Oued Tatta, Anti-Atlas, South-Western Morocco.

Genus **ASELLISCUS** Tate, 1941

1941. *Aselliscus* Tate, Amer. Mus. Nov. No. 1140: 2. *Rhinolophus tricuspidatus* Temminck, from Amboina (Moluccas).

When Tate erected this genus he suggested that the species *stoliczkanus* (Dobson, 1871, from Penang) and *trifidus* should be referred to it. He also compared with them the species "*Triaenops*" or "*Asellia*" *wheeleri*, and came to the conclusion that the latter was closely related to *stoliczkanus*, and that in skull characters *wheeleri* represents a "quite advanced Hipposiderine near *Aselliscus*". As *wheeleri* seems distinct from both

Asellia and *Triaenops*, it is tentatively referred here. See also Dorst, 1948, *Mammalia*, *12:* 16. We do not know whether *wheeleri* is a valid species or a race of one of the earlier-named species just quoted.

? 2 species in the area covered by this list:

Aselliscus trifidus, page 131
Aselliscus wheeleri, page 131

Aselliscus trifidus Peters, 1871

Approximate distribution of species: Burma.

ASELLISCUS TRIFIDUS Peters, 1871

1871. *Phyllorhina trifida* Peters, P.Z.S. 513. Burma.

Aselliscus wheeleri Osgood, 1932

Approximate distribution of species: Indo-China; Kweichow, in Southern China; Northern Burma.

ASELLISCUS WHEELERI Osgood, 1932

1932. *Triaenops wheeleri* Osgood, Field Mus. Publ. Zool. *18:* 224. Muong Moun, Tonkin, Indo-China.

Genus **TRIAENOPS** Dobson, 1871

1871. *Triaenops* Dobson, J. Asiat. Soc. Bengal, *40*, 2: 455. *Triaenops persicus* Dobson.

1 species in the area covered by this list:

Triaenops persicus, page 131

Triaenops persicus Dobson, 1871 Persian Leaf-nosed Bat

Approximate distribution of species: Persia, Arabia, south to Aden, Egypt.

TRIAENOPS PERSICUS Dobson, 1871

1871. *Triaenops persicus* Dobson, J. Asiat. Soc. Bengal, *40*, 2: 455, pl. 18. Shiraz, about 4,750 ft., Persia. Range: to Aden and Egypt.

Genus **COELOPS** Blyth, 1848

1848. *Coelops* Blyth, J. Asiat. Soc. Bengal, *17*, 1: 251. *Coelops frithii* Blyth.
1911. *Chilophylla* Miller, Proc. U.S. Nat. Mus. *38:* 395. *Chilophylla hirsuta* Miller, from Mindoro, Philippine Islands.

1 species in the area covered by this list:

Coelops frithi, page 132

From descriptions it seems that there is not likely to be more than one species in the area now under consideration.

Coelops frithi Blyth, 1848 Tailless Leaf-nosed Bat

Approximate distribution of species: Szechuan and Fukien, China; Formosa; Bengal; Tonkin and Annam, Indo-China; Java, and perhaps Malay Peninsula (if *robinsoni* Bonhote, 1908, is a race of *frithi*).

Coelops frithi frithi Blyth, 1848

1848. *Coelops frithii* Blyth, J. Asiat. Soc. Bengal, *17:* 251. Sundarbans, Bengal, India.

Coelops frithi inflatus Miller, 1928

1928. *Coelops inflata* Miller, Proc. Biol. Soc. Washington, *41:* 85. Yenpingfu, 2,000 ft. Fukien, South-Eastern China. Range: to Indo-China.

Coelops frithi sinicus G. Allen, 1928

1928. *Coelops sinicus* G. Allen, Amer. Mus. Nov. No. 317: 4. Two miles north-east of Wanhsien, Szechuan, China.

Coelops frithi formosanus Horikawa, 1928

1928. *Coelops formosanus* Horikawa, Trans. N.H. Soc. Formosa, *18*, No. 98: 339. Kururu, in Koshun, Formosa.

FAMILY MOLOSSIDAE

Genera: *Otomops*, page 136
Tadarida, page 132

Genus **TADARIDA** Rafinesque, 1814

1814. *Tadarida* Rafinesque, Précis Som. 55. *Cephalotes teniotis* Rafinesque.
1818. *Nyctinomus* E. Geoffroy, Description de l'Egypte, *2:* 114. *Nyctinomus aegyptiacus* Geoffroy.
1821. *Nyctinoma* Bowdich, Anal. Nat. Class. Mamm. 28.
1821. *Nyctinomes* Gray, London Med. Repos. *15:* 299.
1822. *Nyctinomia* Fleming, Philos. Zool. *2:* 178.
1825. *Dinops* Savi, N. Giorn. Lett. Pisa, Sci. *10:* 229. *Dinops cestoni* Savi = *Cephalotes teniotis* Rafinesque.
1830 *vel* 1831. *Dysopes* Cretzschmar, in Rüppell, Atlas Reise nördl. Afrika, Säugeth. 69. Not of Illiger, 1811.
1842. *Mops* Lesson, Nouv. Tabl. Regn. Anim. 18. *Mops indicus* Lesson = *Dysopes mops* F. Cuvier, from Sumatra. Valid as a subgenus
1865. *Mormopterus* Peters, Mber. Preuss. Akad. Wiss. 258. *Nyctinomus jugularis* Peters, from Madagascar — *Vespertilio acetabulosus* Hermann from Mauritius. Valid as a subgenus.
1874. *Chaerephon* Dobson, J. Asiat. Soc. Bengal, *43*, 2: 144. *Nyctinomus johorensis* Dobson, from Johore, Malay States. Valid as a subgenus.
1902. *Nyctinomops* Miller, Proc. Acad. Nat. Sci. Philadelphia, 393. *Nyctinomus femorosacca* Merriam, from California.

1917. *Lophomops* J. Allen, Bull. Amer. Mus. N.H. *37:* 460. *Chaerephon* (*Lophomops*) *chapini* J. Allen, from the Belgian Congo.
1917. *Allomops* J. Allen, Bull. Amer. Mus. N.H. *37:* 470. *Chaerephon* (*Allomops*) *osborni* J. Allen, from the Belgian Congo.
1934. *Philippinopterus* Taylor, Philippine Land Mamm. 314. *Philippinopterus lanei* Taylor, from the Philippine Islands.
1934. *Micronomus* Iredale & Troughton, Mem. Austral. Mus. *6:* 100. *Molossus norfolcensis* Gray, from Norfolk Island (Australasia). (Nom. nud.)
1934. *Austronomus* Iredale & Troughton, *loc. cit. Molossus australis* Gray, from New South Wales, Australia. (Nom. nud.)

This genus was formerly called *Nyctinomus* by virtually all zoologists, but *Tadarida* antedates. Thomas & Hinton, 1923, *P.Z.S.* 251, would separate *Nyctinomus* (type *aegyptiacus*) from *Tadarida* (type *teniotis*) on account of the presence of four or six lower incisors respectively. Miller, however, did not consider this of even subgeneric value. It is customary to divide this genus, which has a nearly world-wide range, into half a dozen or more "genera". Tate, 1941, *Amer. Mus. Nov.* No. 1142, has shown that the chief character used by Miller, 1907, *Families & Genera of Bats*, 244, in his key to the genera, to divide the genera into groups is not strictly constant in *Chaerephon*. Thomas, 1913, *J. Bombay N.H. Soc. 22:* 89–91, rearranged the genera and complicated the classification by yet further generic splitting. We cannot help feeling that Simpson (1945) is correct in stating that the groups *Chaerephon*, *Mops* and *Mormopterus*, which we have included above as of subgeneric value, can well be included in the genus *Tadarida*. Simpson also included *Otomops* in the genus *Tadarida*, but we adopt Mr. R. W. Hayman's suggestion (*in litt.*) that *Otomops* should be retained as a full genus on account of its remarkable cranial characters and striking external features.

5 species of *Tadarida* in the area covered by this list:

Tadarida aegyptiaca, page 134
Tadarida plicata, page 135
Tadarida pumila, page 135
Tadarida teniotis, page 133
Tadarida tragata, page 135

For key to species, see Dobson, 1878, *Cat. Chiroptera*, 420.

Subgenus *TADARIDA* Rafinesque, 1814

Tadarida teniotis Rafinesque, 1814 European Free-tailed Bat

Approximate distribution of species: Portugal, France, Italy, Sicily, Greece—has been recorded from Switzerland; according to Kuzyakin, in the U.S.S.R. it only occurs in Transcaucasia and in Russian Turkestan (near Bokhara); Korea; Fukien, Chihli and Yunnan, China; and has been recorded from Japan and Formosa. Trouessart quoted it from Persia, and Bodenheimer (1935) from Palestine; Egypt. In addition, Ognev (1927) quoted it from Vladivostock.

Tadarida teniotis teniotis Rafinesque, 1814

1814. *Cephalotes teniotis* Rafinesque, Précis. Som. 12. Sicily.
1825. *Dinops cestoni* Savi, N. Giorn. Lett. Pisa, Sci. *10:* 235. Pisa, Italy.
1840. *Dysopes savii* Schinz, Europ. Fauna, *1:* 5. Substitute for *cestoni*.
1871. *Dinops cestonii* var. *nigrogriseus* Schneider, N. Denkschr. Schweiz. Ges. Naturw. *24*, 4: 5. Basel, Switzerland.
1891. *Nyctinomus taeniotis* Thomas, P.Z.S. 182.
1897. *Dysopes midas* Schulze, Helios, Berlin, *14:* 95. Not of Sundevall, 1842.

Range: Italy, Sicily, Greece, Portugal, Caucasus, Turkestan.

Tadarida teniotis rüppelli Temminck, 1826

1826. *Dysopes rüpelii* (sic) Temminck, Mon. Mamm. *1:* 224, pl. 18. Egypt.

Flower, 1932, Notes on Recent Mammals of Egypt, *P.Z.S.* 369, does not list the species. G. Allen (1939) includes it in the African list as *Mops rüppelli*, with a note that "there seems no doubt that this name must replace *midas* Sundevall" (1842, from the Anglo-Egyptian Sudan). There are no specimens in the British Museum, but in our copy of Temminck's work Thomas has noted "= *teniotis*". Allen does not include *Tadarida teniotis* in his African list. Mr. R. W. Hayman, who has compared the skulls of *teniotis* and *midas* with Temminck's description and figures of *rüppelli*, informs us that there is no doubt that Thomas was right and that Allen was wrong in listing *midas*, which is a true *Mops*, as a synonym of *rüppelli*.

Tadarida teniotis insignis Blyth, 1861

1861. *Nyctinomus insignis* Blyth, J. Asiat. Soc. Bengal, *30:* 90. Amoy, Fukien, China.
1870. *Dysopes (Molossus) rueppelii* Swinhoe, P.Z.S. 619. Not of Temminck, 1826.
1920. *Tadarida latouchei* Thomas, Ann. Mag. N.H. *5:* 283. Chinwangtao, coast of North-Eastern Chihli, China.
1931. *Tadarida septentrionalis* Kishida, in Kishida & Mori, Z. Mag. Tokyo, *43:* 379, *nom. nud.* (*N.V.*). N. Korea.

Range: Fukien and Chihli, in China; Korea and Ussuri region; Japan (Abe, 1944).

Tadarida teniotis coecata Thomas, 1922

1922. *Tadarida teniotis coecata* Thomas, Ann. Mag. N.H. *10:* 392. Mekong Valley, about 28°20′ N., 7,000 ft., Yunnan, China.

Tadarida aegyptiaca E. Geoffroy, 1818

Approximate distribution of species: Egypt; Kenya (Hollister, 1918); Sind, Cutch, Poona, Rajputana, Palanpur, Kathiawar, Mysore, Dharwar and Deccan, India; Zululand and Cape Province (Roberts).

Tadarida aegyptiaca aegyptiaca E. Geoffroy, 1818

1818. *Nyctinomus aegyptiacus* Geoffroy, Description de l'Egypte, *2:* 128, pl. 2, No. 2. Egypt.
1826. *Dysopes geoffroyi* Temminck, Mon. Mamm. *1:* 226, pl. 19. Substitute for *aegyptiacus*.

The following also appear to be subspecies:

TADARIDA AEGYPTIACA SINDICA Wroughton, 1919

1919. *Tadarida sindica* Wroughton, J. Bombay. N.H. Soc. *26:* 732. Kashmor, Upper Sind Frontier, India.

TADARIDA AEGYPTIACA THOMASI Wroughton, 1919

1919. *Tadarida thomasi* Wroughton, J. Bombay N.H. Soc. *26:* 732. Bhuj, Cutch, India.

TADARIDA AEGYPTIACA GOSSEI Wroughton, 1919

1919. *Tadarida gossei* Wroughton, J. Bombay N.H. Soc. *27:* 733. Sassoon Hospital, Poona, India.

Tadarida tragata Dobson, 1874

Approximate distribution of species: Calcutta and Malabar, India. (Wroughton (1919) stated that all but one specimen in the B.M. from India for this subgenus belong to the *aegyptiaca* section.)

TADARIDA TRAGATA Dobson, 1874

1874. *Nyctinomus tragatus* Dobson, J. Asiat. Soc. Bengal, *43*, 2: 143. Calcutta, India.

Subgenus *CHAEREPHON* Dobson, 1874

Tadarida plicata Buchannan, 1800 Wrinkle-lipped Bat

Approximate distribution of species: Rajputana, Peninsula of India, Ceylon, Tenasserim; Hainan; Malay States, Sumatra, Borneo, Java; probably represented in the Philippine Islands and Northern Australia.

TADARIDA PLICATA PLICATA Buchannan, 1800

1800. *Vespertilio plicatus* Buchannan, Trans. Linn. Soc. London, *5*: 261, pl. 13. Bengal, India.

1820. *Nyctinomus bengalensis* Desmarest, Encyclop. Méth. (Mamm.), *1:* 116.

1830. *Dysopes murinus* Gray, Illustr. Ind. Zool., pt. 3, pl. 1.

TADARIDA PLICATA INSULARIS Phillips, 1932

1932. *Chaerephon plicatus insularis* Phillips, Spolia Zeylan. *16:* 334. Kumbalgamuwa, 3,000 ft., near Mulhalkelle, 30 miles south-east of Kandy, Central Province, Ceylon.

Tadarida pumila Cretzschmar, 1830 vel 1831

Approximate distribution of species: three specimens in B.M. from Sabiya, 17°10′ N., 42°30′ E., Arabia. South of Sahara, known from Eritrea, Southern Sudan, Uganda, Kenya, Angola, Portuguese East Africa, Transvaal, Bechuanaland, etc.

TADARIDA PUMILA PUMILA Cretzschmar, 1830 vel 1831

1830 vel 1831. *Dysopes pumilus* Cretzschmar, in Ruppell Atlas, Reise Nordl. Afrika, Saugeth. 69, pl. 27. Massawa, Eritrea. Ranges to Arabia, as above.

Genus **OTOMOPS** Thomas, 1913

1913. *Otomops* Thomas, J. Bombay N.H. Soc. *22:* 91. *Nyctinomus wroughtoni* Thomas.

1 species in the area covered by this list:

Otomops wroughtoni, page 136

Otomops wroughtoni Thomas, 1913 Wroughton's Free-tailed Bat

Approximate distribution of species: Kanara, Southern India.

OTOMOPS WROUGHTONI Thomas, 1913

1913. *Nyctinomus wroughtoni* Thomas, J. Bombay N.H. Soc. *22:* 87. Barapede Cave, near Talewadi, Kanara, India.

Cheiromeles (Horsfield, 1824, *Z. Res. Java*), with species *Cheiromeles torquatus* Horsfield, 1824, *loc. cit.*, Penang, Malay States (the Naked Bat), was recorded from Indo-China by Wagner (1855) and from some part of Siam by Boitard (1842), but has not to our knowledge been collected in any part of the region now under discussion in recent years, and is most likely extralimital to this list.

Distribution: Malay States, Sumatra, Java, Borneo, Celebes, Philippine Islands.

FAMILY VESPERTILIONIDAE

Genera: *Barbastella*, page 175
Discopus, page 151
Eptesicus, page 153
Glischropus, page 173
Harpiocephalus, page 187
Hesperoptenus, page 173
Kerivoula, page 187
Miniopterus, page 182
Murina, page 184
Myotis, page 137
Nyctalus, page 158
Nycticeius, page 176
Otonycteris, page 180
Pipistrellus, page 161
Plecotus, page 180
Scotomanes, page 177
Scotophilus, page 178
Tylonycteris, page 174
Vespertilio, page 151

This family is world-wide in distribution and one of the largest in the class Mammalia. Dobson (1878) gave a key to most of the species then known, but the nomenclature and generic arrangement of this work is now out of date. Miller, 1907, *Families & Genera of Bats*, revised the genera (and oversplit them considerably); for

key, see pp. 197–200. Simpson (1945) has attempted some reduction of Miller's long list of genera, but in our opinion has gone rather too far, and he lists *Nyctalus* Bowdich, 1825, in *Pipistrellus* Kaup, 1829, although *Nyctalus* (which is in any case a distinct genus) antedates by four years. Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 567–597, has reviewed the Oriental members of the Miniopterinae, Kerivoulinae and Murininae, and 1942, *Bull. Amer. Mus. N.H. 80:* 221–297, the Oriental Vespertilioninae; see also Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 537, on Eurasian *Myotis*. On the European species, see Miller, 1912, *Catalogue of the Mammals of Western Europe*, 165.

Subfamily Vespertilioninae

Genus **MYOTIS** Kaup, 1829

1829. *Myotis* Kaup, Skizz. Europ. Thierw. *1:* 106. *Vespertilio myotis* Borkhausen.
1829. *Nystactes* Kaup, Skizz. Europ. Thierw. *1:* 108. Not of Gloger, 1827. *Vespertilio bechsteinii* Kuhl.
1830. *Leuconoe* Boie, Isis, Jena, 256. *Vespertilio daubentonii* Kuhl. Valid as a subgenus.
1841. *Selysius* Bonaparte, Faun. Ital. *1:* Introd. 3. *Vespertilio mystacinus* Kuhl. Valid as a subgenus.
1841. *Capaccinius* Bonaparte, *loc. cit. 1:* Indice Distrib. 1. *Vespertilio capaccinii* Bonaparte.
1842. *Trilatitus* Gray, Ann. Mag. N.H. *10:* 258. Included three species: *hasseltii* Temminck, from Java; *macellus* Temminck, from Borneo; and *blepotis* (a *Miniopterus*).
1849. *Tralatitus* Gervais, Dict. Univ. H.N. *13:* 213, modification of *Trilatitus*.
1856. *Brachyotus* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131. Not of Gould, 1837. *Vespertilio mystacinus* Kuhl.
1856. *Isotus* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131. *Vespertilio nattereri* Kuhl (Tate, 1941). Valid as a subgenus.
1866. *Tralatitius* Gray, Ann. Mag. N.H. *17:* 90, modification of *Trilatitus*.
1867. *Pternopterus* Peters, Mber. Preuss. Akad. Wiss. 706. *Vespertilio* (*Pternopterus*) *lobipes* Peters ? = *Vespertilio muricola* Gray.
1870. *Exochurus* Fitzinger, S.B. Akad. Wiss. Wien, *62:* 75. (Based on *macrodactylus* Temminck, *horsfieldii* Temminck, from Java, and *macrotarsus* Waterhouse, from the Philippine Islands.)
1870. *Aeorestes* Fitzinger, S.B. Akad. Wiss. Wien, *62*, 1: 427. (Based on *villosissimus*, *albescens* Geoffroy, and *nigricans* Wied, the last two from South America.)
1870. *Comastes* Fitzinger, S.B. Akad. Wiss. Wien, *62*, 1: 565 (included *Vespertilio capaccinii* Bonaparte and *Vespertilio dasycneme* Boie).
1899. *Euvespertilio* Acloque, Faune de France, Mamm. 38 (included *emarginatus*, *murinus* = *myotis*, *mystacinus*, *nattereri* and *bechsteinii*).
1910. *Chrysopteron* Jentink, Notes Leyden Mus. *32:* 74. *Kerivoula weberi* Jentink, from Celebes. Valid as a subgenus.
1917. *Rickettia* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21*: lxxvii. *Vespertilio* (*Leuconoe*) *ricketti* Thomas. Valid as a subgenus.
1917. *Dichromyotis* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21*: lxxviii. *Vespertilio formosus* Hodgson.

Myotis [*contd.*]

1917. *Paramyotis* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21*: lxxix. New name for *Nyctactes* Kaup, 1829, preoccupied. *Vespertilio bechsteinii* Kuhl. Valid as a subgenus.

It is also probable that *Pizonyx* Miller, 1906 (North America) and *Cistugo* Thomas, 1912 (Africa) should be referred to this genus as subgenera.

For a very able review of this genus, see Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 537. Tate recognizes seven subgenera which are adopted here. It is not quite clear how many species should be retained in the region now under discussion, but Tate's paper and other works suggest that the following 20 are most likely to be valid, in the area covered by this list:

Myotis adversus, page 149
Myotis altarium, page 142
Myotis bechsteini, page 143
Myotis blythi, page 145
Myotis capaccinii, page 148
Myotis dasycneme, page 150
Myotis daubentoni, page 147
Myotis davidi, page 149
Myotis emarginatus, page 141
Myotis formosus, page 146
Myotis frater, page 142
Myotis ikonnikovi, page 141
Myotis macrodactylus, page 150
Myotis myotis, page 144
Myotis mystacinus, page 138
Myotis nattereri, page 143
Myotis pequinius, page 149
Myotis ricketti, page 150
Myotis sicarius, page 146
Myotis siligorensis, page 142

We suggest that *blythi* is the prior name for the European *oxygnathus*.

Subgenus *SELYSIUS* Bonaparte, 1841

In the present subgenus Tate recognizes three sections, typified by *M. mystacinus*, *M. emarginatus* and *M. siligorensis*, and does not allocate *M. frater* (which seems very distinct). There is little doubt that from descriptions *M. altarium* is a valid species. Tate listed *M. ikonnikovi* as a race of *mystacinus*, but it is retained following Kuzyakin, because it seems to occur with *mystacinus* in North-Eastern Asia. Where the two occur together, *ikonnikovi* averages smaller than *mystacinus*.

Myotis mystacinus Kuhl, 1819 Whiskered Bat

Approximate distribution of species: England, Ireland, Sweden, Norway, Belgium, France, Spain, Switzerland, Germany, Denmark, Poland, Holland, Bohemia, Hungary, Rumania, Bulgaria ("entire Continent of Europe" according to Miller). Russia, north to about 62–63 N., south to the Black Sea and Caucasus, Russian Turkestan, eastwards across Siberia to the Ussuri region, Sakhalin, Kamtchatka, Japan, Mongolia, Chinese Turkestan, Formosa, Korea; China, states of Szechuan, Shansi, Chihli, Yunnan, Fukien; Persia (Ognev), Afghanistan (Kuzyakin); Kashmir, Punjab, Nepal, Sikkim, Bhutan Duars, Tenasserim; Laos, in Indo-China; represented Malay States, Sumatra, Java, Borneo.

Our listing of this species is based on that of Tate, 1941.

Myotis mystacinus mystacinus Kuhl, 1819

1819. *Vespertilio mystacinus* Kuhl, Ann. Wetterau Ges. Naturk. *4*, 2: 202. Germany.
1821. *Vespertilio collaris* Schinz, Das Thierreich von Cuvier, *1:* 177. Mt. Blanc, Haute-Savoie, France.
1834. *Vespertilio humeralis* Baillon, Mém. Soc. Émul. Abbeville, *1833:* 50. Abbeville, Somme, France.
1837. *Vespertilio schinzii* Brehm, Ornis, *3:* 27. Renthendorf, Thuringia, Germany.
1843. *Vespertilio schrankii* Wagner, Arch. Naturgesch. *9*, 2: 25. ? Munich, Germany.
1863. *Brachyotus mystacinus* var. *nigricans* Koch, Jb. Nassau Ver. Naturk. *18:* 444. Wiesbaden, Nassau, Germany.
1863. *Brachyotus mystacinus* var. *rufofuscus* Koch, *loc. cit.*, same locality.
1863. *Brachyotus mystacinus* var. *aureus* Koch, *loc. cit.* 445. Breisgau, Germany.
1869. *Vespertilio mystacinus* var. *nigricans* Fatio, Faune Vert. Suisse, *1:* 92. Switzerland.
1869. *Vespertilio lugubris* Fatio, Faune Vert. Suisse, *1:* 93. Alternative for *nigricans* Fatio.
1871. *Vespertilio mystacinus* var. *nigrofuscus* Fitzinger, S.B. Akad. Wiss. Wien, *63*, 1: 217. Renaming of *schinzii* Brehm.

Range: Europe.

Myotis mystacinus brandti Eversmann, 1845

1845. *Vespertilio brandtii* Eversmann, Bull. Soc. Nat. Moscou, *18*, 1: 505. Foothills of Ural Mountains, U.S.S.R.
1905. *Vespertilio mystacinus sibiricus* Kastschenko, Observations on mammals from W. Siberia & Turkestan, in Trans. Tomsk Univ. *27*, 1: 25. Siberia.

Myotis mystacinus muricola Gray, 1846

1841. *Vespertilio muricola* Hodgson, Calcutta J.N.H. *2:* 212, *nom. nud.*
1846. *Vespertilio muricola* Gray, Cat. Hodgson Coll. B.M. 4. Nepal.
(?) 1867. *Vespertilio* (*Pternopterus*) *lobipes* Peters, Mber. Preuss. Akad. Wiss. 706. Akyab, Arakan, Burma.

Range: Nepal to Bhutan Duars, Tenasserim and Laos.

Myotis mystacinus caliginosus Tomes, 1859

1859. *Vespertilio caliginosus* Tomes, P.Z.S. 73. India. Range: known from Simla and Sikkim.
1871. *Vespertilio blanfordi* Dobson, Proc. Asiat. Soc. Bengal, 214. Himalayas.

Myotis mystacinus nipalensis Dobson, 1871

1844. *Vespertilio pallidiventris* Hodgson, Calcutta J.N.H. *4:* 286, *nom. nud.*
1871. *Vespertilio nipalensis* Dobson, Proc. Asiat. Soc. Bengal, 214. Katmandu, Nepal.
(?) 1926. *Myotis meinertzhageni* Thomas, Ann. Mag. N.H. *17:* 609. Junction of Nubra and Shyok Rivers, Ladak, Kashmir.

Myotis mystacinus moupinensis Milne-Edwards, 1872

1872. *Vespertilio moupinensis* Milne-Edwards, Rech. H.N. Mamm. 253, pl. 37a, fig. 2; pl. 37c, fig. 4. Moupin, Szechuan, China. Ranges to Yunnan and Fukien, China.

MYOTIS MYSTACINUS MONTIVAGUS Dobson, 1874

1874. *Vespertilio montivagus* Dobson, J. Asiat. Soc. Bengal, *43*, 2: 237. Hotha, Yunnan, China. Ranges to Chihli, Fukien (part), China.

MYOTIS MYSTACINUS PRZEWALSKII Bobrinskii, 1926

1926. *Myotis mystacinus przewalskii* Bobrinskii, C.R. Acad. Sci. U.R.S.S. 95. Valley of Moldja River, northern slope of Kotan Tagh, Southern Sinkiang. Range: to Shansi, China, and Russian Asia.

MYOTIS MYSTACINUS GRACILIS Ognev, 1927

1927. *Myotis mystacinus gracilis* Ognev, J. Mamm. *8:* 145. Vladivostock, Eastern Siberia. Range includes Lake Baikal district to Sakhalin, Kamtchatka, also Korea, Hokkaido, Hondo, Kurile Islands.

MYOTIS MYSTACINUS TRANSCASPICUS Ognev & Heptner, 1928

1928. *Myotis mystacinus transcaspicus* Ognev & Heptner, Zool. Anz. *75:* 260. Mikhailovskoi, Kopet Dag, Transcaspia.

MYOTIS MYSTACINUS KUKUNORIENSIS Bobrinskii, 1929

1929. *Myotis mystacinus kukunoriensis* Bobrinskii, Annu. Mus. Zool. Acad. St. Pétersb. *30:* 221. Balekut-Gomi, Hwang Ho, south of Kukunor, North-Eastern Tibet.

MYOTIS MYSTACINUS LATIROSTRIS Kishida, 1932

1932. *Myotis latirostris* Kishida, Lansania, *4*, 40: 153. (*M.V.*) Central Formosa.
1935. *Myotis muricola orii* Kuroda, J. Mamm. *16:* 290. Taihezan, Taihokusiu, Northern Formosa.

MYOTIS MYSTACINUS SOGDIANUS Kuzyakin, 1934

1934. *Myotis mystacinus sogdianus* Kuzyakin, Bull. Soc. Nat. Moscou, *43:* 321, 329. Tashkent, Russian Turkestan.

MYOTIS MYSTACINUS PAMIRENSIS Kuzyakin, 1935

1935. *Myotis mystacinus pamirensis* Kuzyakin, Bull. Soc. Nat. Moscou, *44:* 431, 436 Jaschul-Kul Lake, Pamir Mountains (South-East Russian Turkestan).

MYOTIS MYSTACINUS AURASCENS Kuzyakin, 1935

1935. *Myotis mystacinus aurascens* Kuzyakin, Bull. Soc. Nat. Moscou, *44:* 432, 437. Korkushin, Vladikavkaz, Northern Caucasus.

MYOTIS MYSTACINUS BULGARICUS Heinrich, 1936

1936. *Myotis mystacinus bulgaricus* Heinrich, Mitt. Naturw. Inst. Sofia, *9:* 38. East of Plovdiv, Bulgaria.

MYOTIS MYSTACINUS HAJASTANICUS Argyropulo, 1939

1939. *Myotis mystacinus hajastanicus* Argyropulo, Zool. Pap. Biol. Inst. Erivan, *1:* 27. Schordsa (Nadeshino), Lake Sevanga, Armenia.

Myotis ikonnikovi Ognev, 1912

Approximate distribution of species: from the Russian Altai and North-Eastern Mongolia, east to Sakhalin, north to Southern Yakutia, and includes Korea, Manchuria and Hokkaido.

Myotis ikonnikovi Ognev, 1912

1912. *Myotis ikonnikovi* Ognev, Annu. Mus. Zool. Acad. St. Pétersb. *16:* 477. Iman district, Ussuri Valley, Eastern Siberia.

Myotis emarginatus Geoffroy, 1806 Geoffroy's Bat

Approximate distribution of species: Holland, France, Germany, Switzerland, Italy, Hungary, Greece, Crimea, Transcaucasia, Russian Turkestan, Palestine, Persian Baluchistan.

Myotis emarginatus emarginatus E. Geoffroy, 1806

1806. *Vespertilio emarginatus* Geoffroy, Ann. Mus. H.N. Paris, *8:* 198. Charlemont, Givet, Ardennes, France.

1844. *Vespertilio rufescens* Crespon, Faune Méridionale, *1:* 20. Near Nimes, Gard, France. Not of Brehm, 1829.

1853. *Vespertilio ciliatus* Blasius, Arch. Naturgesch. *19,* 1: 287. Near Cologne, Germany.

1856. *Vespertilio schrankii* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 178, *nom nud.* Not of Wagner, 1843.

1880. *Myotis ciliata* var. *budapestiensis* Margó, Magyar orv. és természetvisg. xx, nagygyül. munk, 255. Budapest, Hungary.

1890. *Vespertilio neglectus* Fatio, Arch. Sci. Genève, *24:* 512. Valavran, near Geneva, Switzerland.

Range: Europe, as above, east to the Caucasus.

Myotis emarginatus desertorum Dobson, 1875

1875. *Vespertilio desertorum* Dobson, in Blanford, Ann. Mag. N.H. *16:* 309. Jalk, Persian Baluchistan.

1920. *Myotis lanceus* Thomas, J. Bombay N.H. Soc. *26:* 933, misprint, corrected to *lanaceus* Wroughton, 1920, J. Bombay N.H. Soc. *27:* 316. Dizak district, 3,820 ft., Persian Baluchistan.

Myotis emarginatus turcomanicus Bobrinskii, 1925

1925. *Myotis emarginatus turcomanicus* Bobrinskii, Bull. Soc. Nat. Moscou, *34:* 358. Murgab Valley, Turkmen-Kala, Russian Turkestan.

Myotis emarginatus saturatus Kuzyakin, 1934

1934. *Myotis lanaceus saturatus* Kuzyakin, Bull. Soc. N.H. Moscou, *43:* 320, 329. Tashkent, Russian Turkestan.

The two following named species seem allied to *emarginatus*. Tate placed the second in subgenus *Myotis*, but the measurements he gives are too small for that subgenus.

MYOTIS PEYTONI Wroughton & Ryley, 1913

1913. *Myotis peytoni* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 13. Gersoppa Falls, 1,300 ft., Kanara, Southern India.

MYOTIS PRIMULA Thomas, 1920

1920. *Myotis primula* Thomas, J. Bombay N.H. Soc. *27:* 248. Pashok, 3,500 ft., near Darjeeling, North-Eastern India.

Myotis altarium Thomas, 1911

Approximate distribution of species: Szechuan, China; and has also (1949) been recorded from Kweichow, China.

MYOTIS ALTARIUM Thomas, 1911

1911. *Myotis altarium* Thomas, Abstr. P.Z.S. 3; P.Z.S. 161. Omei Shan (Omi San), Szechuan, China.

Myotis siligorensis Horsfield, 1855

Approximate distribution of species: Kumaon, Nepal, Sikkim; Fukien, Southern China; Tonkin, Indo-China; Siam.

MYOTIS SILIGORENSIS SILIGORENSIS Horsfield, 1855

1855. *Vespertilio siligorensis* Horsfield, Ann. Mag. N.H. *16:* 102. Siligori, Nepal. (Wroughton gave Darjeeling.)

(?) 1855. *Vespertilio darjilingensis* Horsfield, *loc. cit.*

Range: includes Kumaon, Sikkim.

MYOTIS SILIGORENSIS SOWERBYI Howell, 1926

1926. *Myotis sowerbyi* Howell, Proc. Biol. Soc. Washington, *39:* 138. Yenpingfu, Fukien, 3,000 ft., Southern China. G. Allen referred this to *laniger* as a synonym (which it is not, according to Tate and Osgood) and quoted that form from Yunnan, Fukien, Hainan.

MYOTIS SILIGORENSIS ALTICRANIATUS Osgood, 1932

1932. *Myotis siligorensis alticraniatus* Osgood, Field Mus. Publ. Zool *18:* 232. Muong Moun, Tonkin, Indo-China.

MYOTIS SILIGORENSIS THAIANUS Shamel, 1942

1942. *Myotis siligorensis thaianus* Shamel, J. Mamm. *23:* 323. Chiengmai, Siam.

Myotis frater G. Allen, 1923

Approximate distribution of species: Fukien, South-Eastern China; and most likely represented in Korea, the Southern Ussuri district of Eastern Siberia, the Krasnoiarsk district (Siberia) and Tadjikistan (Russian Turkestan).

MYOTIS FRATER FRATER G. Allen, 1923

1923. *Myotis frater* G. Allen, Amer. Mus. Nov. No. 85: 6. Yenping, Fukien, South-Eastern China.

MYOTIS (?) FRATER LONGICAUDATUS Ognev, 1927

1927. *Myotis longicaudatus* Ognev, J. Mamm. *8:* 145. Vladivostock, Eastern Siberia. Range: to Korea, and the Siberian localities listed above. The published measurements are very similar to those of *frater.*

Subgenus *ISOTUS* Kolenati, 1856

Myotis nattereri Kuhl, 1818 Natterer's Bat

Approximate distribution of species: Britain, Ireland, France, Switzerland, Spain, Italy, Holland, Denmark, Sweden, Norway, Poland, Germany; Crimea, Caucasus, a few places in Russia (including near Leningrad, Kirov (formerly Vyatka)); Kopetdag (South-Western Turkestan), Sayan Mountains, Southern Yakutia, Amur Valley, east to Vladivostock; Japan, Korea and Manchuria (Kuzyakin).

MYOTIS NATTERERI NATTERERI Kuhl, 1818

1818. *Vespertilio nattereri* Kuhl, Ann. Wetterau Ges. Naturk. *4,* 1: 33. Hanau, Hessen, Germany.

1863. *Isotus nattereri* var. *typus* Koch, Jb. Nassau. Ver. Naturk. *18:* 430. Wiesbaden, Germany.

1863. *Isotus nattereri* var. *spelaeus* Koch, *loc. cit.* Erdbach, Nassau, Germany.

1904. *Myotis escalerai* Cabrera, Mem. Soc. Esp. H.N. *2:* 279. Foyos, near Valencia, Spain.

Range: Europe.

MYOTIS NATTERERI BOMBINUS Thomas, 1905

1905. *Myotis nattereri bombinus* Thomas, P.Z.S. *1905,* 2: 337. Tano, Miyasaki Ken, Kiushiu, 500 ft., Japan.

MYOTIS NATTERERI AMURENSIS Ognev, 1927

1927. *Myotis nattereri amurensis* Ognev, J. Mamm. *8:* 144. Amur River, Eastern Siberia. Ranges to Northern Korea.

MYOTIS NATTERERI TSCHULIENSIS Kuzyakin, 1935

1935. *Myotis nattereri tschuliensis* Kuzyakin, Bull. Soc. Nat. Moscou, *44:* 434, 437. Tschuli (Chuli), Kopet-dag Mountains, South-West Russian Turkestan.

Subgenus *PARAMYOTIS* Bianchi, 1916

Myotis bechsteini Kuhl, 1818 Bechstein's Bat

Approximate distribution of species: England, France, Belgium, Holland, Spain, Switzerland, Germany, Hungary, Sweden, Poland, Lithuania, Ukraine, Caucasus and North-Western Transcaucasia

MYOTIS BECHSTEINI Kuhl, 1818

1818. *Vespertilio bechsteinii* Kuhl, Ann. Wetterau. Ges. Naturk. *4*, 1: 30. Hanau, Hessen, Germany.
1902. *Vespertilio ghidinii* Fatio, Rev. Suisse Zool. *10:* 401. See also Fatio, 1905, Arch. Sci. Genève, *19:* 511. Lugano, Ticino, Switzerland.
1906. *Myotis bechsteinii favonicus* Thomas, Ann. Mag. N.H. *18:* 220. La Granja, northern side of Sierra de Guadarrama, Segovia, Spain.

Subgenus *MYOTIS* Kaup, 1829

We provisionally suggest that *Myotis blythi* (Tomes) is the first name for a species hitherto called *oxygnathus* which is much like *M. myotis* but occurs with it fairly extensively in Europe and averages smaller in size. From these two species *M. sicarius* seems quite distinct, both cranially and dentally.

Myotis myotis Borkhausen, 1797 — Large Mouse-eared Bat

Approximate distribution of species: France, Switzerland, Italy, Sardinia, Spain, Portugal, Germany, Poland, Hungary, Rumania; Southern Sweden, and has once been recorded from England. Eastwards to the Soviet Carpathians (Kuzyakin); Shensi, Szechuan, Yunnan, Chekiang and Fukien, China; Persia and Afghanistan.

As here listed, this is equivalent to the largest members of *Myotis* (*sensu stricto*) as listed by Tate, 1941, p. 548.

MYOTIS MYOTIS MYOTIS Borkhausen, 1797

1774. *Vespertilio murinus* Schreber, Säugeth. *1:* 165, and of Dobson, Blanford, and earlier authors, but not of Linnaeus, 1758.
1797. *Vespertilio myotis* Borkhausen, Deutsche Fauna, *1:* 80. Thuringia, Germany.
1797. *Vespertilio myosotis* (E.A.) Compend. Bibliothek, *21* (Zoologe *5–8*): 46. (This work does not appear to be available in London, and the reference is quoted as given by Sherborn. Other authors have quoted it as of Borkhausen and as of Bechstein, with dates 1797 or 1800.)
1827. *Vespertilio submurinus* Brehm, Ornis, *3:* 23. Renthendorf, Thuringia, Germany.
1844. *Vespertilio latipennis* Crespon, Faune Méridionale, *1:* 17. Near Nimes, Gard, France.
1863. *Myotis murinus* var. *typus* Koch, Jb. Nassau Ver. Naturk. *18:* 415. Wiesbaden, Nassau, Germany.
1863. *Myotis murinus* var. *alpinus* Koch, *loc. cit.* St. Gothard, Uri, Switzerland.
1886. *Myotis murina spelaea* Bielz, Verh. Mitt. Siebenburgischen Ver. Naturw. Hermannstadt, *36:* 83. Homorod-Almas Cave, Hungary. *Nec* Koch, 1863.

Range: Europe.

MYOTIS MYOTIS CHINENSIS Tomes, 1857

1857. *Vespertilio chinensis* Tomes, P.Z.S. 52. Southern China. Range: Yunnan to Fukien.

MYOTIS MYOTIS OMARI Thomas, 1906

1906. *Myotis myotis omari* Thomas, P.Z.S. *1905*, 2: 521. Derbent, 50 miles west of Isfahan, 6,500 ft., Persia. (Ognev also recorded it from Kopet-Dag, South-West Russian Turkestan.)

MYOTIS MYOTIS ANCILLA Thomas, 1910

1910. *Myotis myosotis ancilla* Thomas, Abstr. P.Z.S. 25; P.Z.S. 636. Shangchow, South-Eastern Shensi, China.

MYOTIS MYOTIS RISORIUS Cheesman, 1921

1921. *Myotis myotis risorius* Cheesman, J. Bombay N.H. Soc. *27:* 575. Shiraz, 5,200 ft. Persia.

MYOTIS MYOTIS LUCTUOSUS G. Allen, 1923

1923. *Myotis chinensis luctuosus* G. Allen, Amer. Mus. Nov. No. 85: 5. Wanhsien, Szechuan, China.

Myotis blythi Tomes, 1857

Approximate distribution of species, as here understood: Spain, Switzerland, Austria, Italy, Sardinia, Malta, Montenegro, Greece, Crete; U.S.S.R. localities include Moldavia, Crimea, Caucasus, Turkmenia, Western Tianshan, Hissar-Alai Mountains and Turanskaya Lowlands. Kuldja (Western Chinese Turkestan) according to Ognev. Rajputana, Punjab and perhaps Kashmir. Asia Minor and Palestine (according to Kuzyakin, in Bobrinskii). Algeria, Tunis, Morocco.

MYOTIS BLYTHI BLYTHI Tomes, 1857

1857. *Vespertilio blythii* Tomes, P.Z.S. 53. Nasirabad, Rajputana, India. Ranges to Simla, Northern India.

MYOTIS (?) BLYTHI DOBSONI Trouessart, 1878

1873. *Vespertilio murinoides* Dobson, J. Asiat. Soc. Bengal, *42*, 2: 205. Not of Lartet, 1851. Chamba, 3,000 ft., North-Western Himalayas.

1878. *Vespertilio dobsoni* Trouessart, Rev. Zool. Paris, *6:* 248. New name for *murinoides* Dobson, preoccupied. Synonym of *blythii*, according to Wroughton.

Blanford listed the form *Vespertilio africanus* Dobson, 1875, in synonymy with *blythi*, but it is thought to have come from Gabon, West Africa. (See G. M. Allen, 1939, *Checklist African Mammals*.)

MYOTIS (?) BLYTHI OXYGNATHUS Monticelli, 1885

1885. *Vespertilio oxygnathus* Monticelli, Ann. Accad. Aspir. Nat. *1:* 82. Matera, Basilicata, Italy.

Range: Europe, Turkestan, North-West Africa and South-Western Asia, as listed above.

Myotis sicarius Thomas, 1915

Approximate distribution of species: Sikkim, India.

Myotis sicarius Thomas, 1915

1915. *Myotis sicarius* Thomas, J. Bombay N.H. Soc. *23:* 608. Northern Sikkim.

Subgenus *CHRYSOPTERON* Jentink, 1910

Myotis formosus Hodgson, 1835 Hodgson's Bat

Approximate distribution of species: Fukien and adjacent states in Southern China, Nepal, Punjab, Kumaon (Blanford also quoted it from Sikkim, Bengal, Assam); Korea, Formosa, Southern Japan.

Myotis formosus formosus Hodgson, 1835

1835. *Vespertilio formosa* Hodgson, J. Asiat. Soc. Bengal, *4:* 700. Nepal. Range includes Kumaon and Punjab.

1863. *Kerivoula pallida* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 34. Chaibassa, Orissa, India.

1871. *Vespertilio auratus* Dobson, J. Asiat. Soc. Bengal, *40*, 2: 186. Darjeeling, India.

Myotis formosus rufoniger Tomes, 1858

1858. *Vespertilio rufo-niger* Tomes, P.Z.S. 79, pl. 60. Shanghai, Kiangsu, China. Range includes Fukien, China.

Myotis (?) formosus andersoni Trouessart, 1897

1881. *Vespertilio dobsoni* Anderson, Cat. Mamm. Ind. Mus. 143. Purneah, Bengal. Not of Trouessart, 1878.

1897. *Vespertilio andersoni* Trouessart, Cat. Mamm. 129. New name for *dobsoni* Anderson, preoccupied.

Myotis formosus tsuensis Kuroda, 1922

1922. *Myotis tsuensis* Kuroda, J. Mamm. *3:* 43. Izugahara, Tsushima Island, Southern Japan. (Status *fide* Kuroda.)

Myotis formosus watasei Kishida, 1924

1924. *Myotis watasei* Kishida, Zool. Mag. Tokyo, *36:* 30–49, 127–139. (*N.V.*). Terason, Formosa.

Myotis formosus chofusukei Mori, 1928

1928. *Myotis chofusukei* Mori, Annot. Zool. Jap. *11:* 389. Kaishu, Kokaido, Korea.

Subgenus *LEUCONOE* Boie, 1830

Tate (1941, 550) divides this subgenus into five sections, typified by *daubentoni*, *capaccinii*, *davidi*, *adversus* and *dasycneme*. There are several other standing species. Of

these, *M. pequinius* is from descriptions certainly valid. Another early name, *M. macrodactylus*, is regarded as a subspecies of *M. capaccinii* by Kuzyakin, in Bobrinskii (1944), but as noted by Thomas (1906, *P.Z.S. 1905*, 2: 337) this is an error. Mr. R. W. Hayman states that in the extensive series in the British Museum the tibia and adjacent membrane are not furred, thereby differing from *capaccinii*. Tate placed the species tentatively in his *adversus* section, and Mr. Hayman states *M. macrodactylus* differs from *M. adversus* and *M. daubentoni* by the attachment of the wing membrane, which is high on the tibia in *macrodactylus*, not so in the other two species just mentioned.

Myotis daubentoni Kuhl, 1819 Daubenton's Bat. Water Bat

Approximate distribution of species: Britain, Ireland, Norway, Sweden, France, Switzerland, Holland, Denmark, Spain, Italy, Germany, Rumania, Poland; Russia and Siberia, eastwards to Kamtchatka, Sakhalin and Ussuri region, its northern limit runs close to the 60th parallel, and its southern limit from Southern Ukraine, Southern Volga, Northern Kazakstan, the Altai. Tate quotes it from Japan and the Kurile Islands. Manchuria, Mongolia, Fukien (? Yunnan and Hainan), China; Bodenheimer quotes it from Palestine.

Myotis daubentoni daubentoni Kuhl, 1819

1819. *Vespertilio daubentonii* Kuh. Ann. Wetterau. Ges. Naturk. *4*, 2: 195. Hanau, Hessen–Nassau, Germany.
1839. *Vespertilio aedilis* Jenyns, Ann. Nat. Hist. *3:* 73. Aukland St. Andrew, Durham, England.
1844. *Vespertilio lanatus* Crespon, Faune Méridional. *1:* 15. South of Nimes, Gard, France.
1871. *Vespertilio capucinellus* Fitzinger, S.B. Akad. Wiss. Wien, *63*, 1: 206. ? Bavaria.
1871. *Vespertilio minutellus* Fitzinger, *loc. cit.* ? Bavaria.
1871. *Vespertilio daubentonii albus* Fitzinger, *loc. cit.* 210. Renaming of *aedilis* Jenyns.
1890. *Vespertilio staufferi* Fatio, Faune Vert. Suisse, *5*, 3me suppl. aux Mamm. 6. Lucerne, Switzerland.

Range: Europe.

Myotis daubentoni volgensis Eversmann, 1840

1840. *Vespertilio volgensis* Eversmann, Bull. Soc. Nat. Moscou, 24. Ural Mountains, Eastern Russia.
1912. *Myotis petax* Hollister, Smiths Misc. Coll. *60:* 6. Kosh-Agatch, Chuiskaya steppe, 7,300 ft., Altai district, Siberia.

Myotis (?) daubentoni laniger Peters, 1871

1871. *Vespertilio laniger* Peters, in Swinhoe, P.Z.S. *1870:* 617. Amoy, Fukien, China.

Myotis daubentoni ussuriensis Ognev, 1927

1927. *Myotis daubentonii ussuriensis* Ognev, J. Mamm. *8:* 146. Near Vladivostock, Eastern Siberia. Ranges to Sakhalin, Korea.

Myotis daubentoni loukashkini Shamel, 1942

1942. *Myotis petax loukashkini* Shamel, Proc. Biol. Soc. Washington, *55:* 103. Wutalienchieh, Third Lake, Heilungkiang Province, Northern Manchuria.

Myotis capaccinii Bonaparte, 1837 Long-fingered Bat

Approximate distribution of species: Southern France, Spain, Italy, Switzerland, Sardinia, Transylvania, Bulgaria; Lower Amu-Darya, Russian Turkestan; besides this Kuzyakin quotes the species from the southern Maritime Province of Siberia (under the name *M. c. macrodactylus*; but *macrodactylus* is not *capaccinii*, see above under subgenus *Leuconoe*); Morocco, Algeria.

Myotis capaccinii capaccinii Bonaparte, 1837

1837. *Vespertilio capaccinii* Bonaparte, Faun. Ital. *1*, fasc. 20. Sicily.

1840. *Vespertilio megapodius* Temminck, Mon. Mamm. *2:* 189. Sardinia.

1841. *Vespertilio dasypus* de Sélys Longchamps, Atti della seconda Riun. degli Sci. Italiani, Torino, *1840:* 247. Sardinia.

?) 1844. *Vespertilio pellucens* Crespon, Faune Méridionale, *1:* 16. Cave near Pont-du-Gard, Gard, France.

?) 1860. *Brachyotus blasii* Kolenati, Jh. Mähr. Schl. Ges. Ackerbau, *1859:* 102. Swabia, Southern Bavaria, Germany.

1878. *Vespertilio majori* Ninni, Atti R. Ist. Veneto, *4*, i: 721. Substitute for *blasii* Forsyth Major, 1877, Atti Soc. Tosc. Sci. Nat. Pisa, *3:* 108.

Range: Europe, Morocco and Algeria.

Myotis capaccinii bureschi Heinrich, 1936

1936. *Leuconoe capaccinii bureschi* Heinrich, Mitt. Naturw. Inst. Sofia, *9:* 38. Karamler, Strandja-Balkan, 800 ft., Bulgaria.

The two following-named species are allied to *M. capaccinii*, and possibly represent it.

Myotis fimbriatus Peters, 1871

1871. *Vespertilio fimbriatus* Peters, P.Z.S. *1870:* 617. Amoy, Fukien, China.

1926. *Myotis hirsutus* Howell, Proc. Biol. Soc. Washington, *39:* 139. Yenpingfu, Fukien, 2,000 ft., China.

Myotis longipes Dobson, 1873

?) 1855. *Myotis theobaldi* Blyth, J. Asiat. Soc. Bengal, *24:* 363. Caves near Matar Nag, north of Islamabad, Kashmir. Thomas, 1915, J. Bombay N.H. Soc. *23:* 610, agrees with Blanford that this form should be considered unidentifiable.

1872. *Vespertilio macropus* Dobson, Proc. Asiat. Soc. Bengal, 209. Not of Gould, 1854. Caves of Bhima Devi, 6,000 ft., Kashmir.

1873. *Vespertilio longipes* Dobson, Proc. Asiat. Soc. Bengal, 110. Renaming of *macropus*, preoccupied.

? 1875. *Vespertilio megalopus* Dobson, Ann. Mag. N.H. *16:* 261. ? Kashmir. Dobson gave the locality as Gaboon, West Africa, but Thomas, 1915, J. Bombay N.H. Soc. *23:* 610, said the type was identical with a cotype of *longipes* and certainly did not come from Gaboon.

Myotis pequinius Thomas, 1908

Approximate distribution of species: Chihli, China.

MYOTIS PEQUINIUS Thomas, 1908

1908. *Myotis (Leuconoe) pequinius* Thomas, P.Z.S. 637. Thirty miles west of Pekin, Chihli, 600 ft., China.

Myotis davidi Peters, 1869

Approximate distribution of species: Chihli, and apparently Hainan and Kiangsi, China.

MYOTIS DAVIDI Peters, 1869

1869. *Vespertilio davidii* Peters, Mber. Preuss. Akad. Wiss. 402. Pekin, Chihli, China.

Myotis adversus Horsfield, 1824

Approximate distribution of species: Malay States, Java, probably Borneo, Sumatra, ? Celebes, ? Australia; for status of type specimens and immediate allies, see Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 551. Siam. ? Ceylon (the form quoted from Ceylon by Wroughton (1918) as "*hasselti*", forearm 40 mm. in the key, cannot be *hasselti*, as Tate shows this to have been based on a small form, with forearm 32 mm.). Possibly also represented in Formosa, Tibet, the Andaman Islands and Southern India.

The listing of this species is provisional.

(MYOTIS ADVERSUS ADVERSUS Horsfield, 1824. Extralimital)

1824. *Vespertilio adversus* Horsfield, Zool. Res. Java, (8). Java.

MYOTIS (?) ADVERSUS DRYAS Andersen, 1907

1907. *Myotis dryas* Andersen, Ann. Mus. Stor. Nat. Genova, *3:* 33. Port Blair, South Andaman Islands, Bay of Bengal.

MYOTIS (?) ADVERSUS TAIWANENSIS Ärnbäck-Christie-Linde, 1908

1908. *Myotis taiwanensis* Arnbäck-Christie-Linde, Ann. Mag. N.H. *2:* 235. Takao, Anping, Tainan, Formosa. Range: has also been recorded from Tibet.

MYOTIS (?) ADVERSUS PESHWA Thomas, 1915

1915. *Leuconoe peshwa* Thomas, J. Bombay N.H. Soc. *23:* 611. Poona, Bombay, India.

MYOTIS ADVERSUS CONTINENTIS Shamel, 1942

1942. *Myotis adversus continentis* Shamel, J. Mamm. *23:* 323. Bangkok, Siam.

MYOTIS (?) ADVERSUS (?) SUBSP.

1918. *Leuconoe hasselti* Wroughton, J. Bombay N.H. Soc. *25:* 598. (Not *hasselti* Temminck, 1840, from Java.) Ceylon, quoted by Wroughton from Northern, Central and Eastern Provinces.

Tate thought the following form should be referred to the *adversus* section of *Leuconoe*, but Chaworth-Musters, in a paper he was preparing on the bats of Arabia, shortly before his death, made the suggestion that *dogalensis* was based on a young specimen of the African *Myotis bocagei* Peters, 1870, which Tate (p. 552) refers to subgenus *Selysius*.

MYOTIS DOGALENSIS Monticelli, 1887

1887. *Vespertilio dogalensis* Monticelli, Ann. Mus. Stor. Nat. Genova, *5:* 518. Aden, Arabia.

Myotis macrodactylus Temminck, 1840

Approximate distribution of species: Japan.

MYOTIS MACRODACTYLUS Temminck, 1840

1840. *Vespertilio macrodactylus* Temminck, Mon. Mamm. *2:* 231, pl. 58, figs. 3, 4, 5. Japan. Known from South Kuriles, Hondo, Shikoku, Kiushiu.

Myotis dasycneme Boie, 1825 Pond Bat

Approximate distribution of species: Holland, Belgium, Northern France (Kuzyakin), Denmark, Sweden, Poland; Russia, between 49° and 60° N., eastwards across Western Siberia to the Yenesei.

MYOTIS DASYCNEME DASYCNEME Boie, 1825

1823. *Vespertilio mystacinus* Boie, Isis, Jena, 965, not of Kuhl, 1819.
1825. *Vespertilio dasycneme* Boie, Isis, Jena, 1200. Dagbieg, near Wiborg, Jutland, Denmark. Renaming of *mystacinus* Boie, preoccupied.
1839. *Vespertilio limnophilus* Temminck, Mon. Mamm. *2:* 176, pl. 48, figs. 1, 2. Holland.

MYOTIS DASYCNEME MAJOR Ognev & Worobiev, 1923

1923. *Myotis dasycneme major* Ognev & Worobiev, Fauna Terr. Vert. Govt. Voronesh, 98. Voronesh, Russia.

Subgenus *RICKETTIA* Bianchi, 1916

Myotis ricketti Thomas, 1894 Rickett's Big-footed Bat

Approximate distribution of species: China, states of Fukien, Anhwei, Shantung.

MYOTIS RICKETTI Thomas, 1894

?) 1869. *Vespertilio (Leuconoe) pilosa* Peters, Mber. Preuss. Akad. Wiss. 403. Thought to be from Uruguay, South America. G. Allen (1938, 224) uses this name, but is not followed by Tate (1941).
1894. *Vespertilio (Leuconoe) ricketti* Thomas, Ann. Mag. N.H. *14:* 300. Foochow, Fukien, China.

Incertae sedis

1863. *Myotis ? berdmorei* Blyth, Cat. Mamm. Mus. Asiat. Soc. 35, based on description without name in Blyth, 1859, J. Asiat. Soc. Bengal, *28:* 293, of a bat from Schwegyin, Burma. ? Unidentifiable; see Blanford, 1891, Fauna Brit. India, Mamm. 330.
1942. *Myotis deignani* Shamel, J. Mamm. *23:* 324. Chiengmai, Siam. Tate (1947, Mamm. E. Asia) lists it in subgenus *Selysius.*
1943. *Myotis coluotus* Kostron, Rozpr. Ceske Akad. *52,* 17: 1, and Bull. Int. Acad. Prague, *43:* 190. Jaworzitschko, Northern Moravia, Czechoslovakia.
1944. *Myotis flavus* Shamel, J. Mamm. *25:* 191. Enri, Formosa. Tate (1947, Mamm. E. Asia) lists it in subgenus *Chrysopteron.*
1944. *Myotis abei* Yoshikura, Zool. Mag. Tokyo, *56* (1, 2, 3): 6. (*N.V.*). Southern Sakhalin. (In Japanese, but title is "On a new Whiskered Bat".)
1931. *Pactia mori* Kishida & Mori, Zool. Mag. Tokyo, *43:* 378, Korea, *nom. nud.*

Genus **DISCOPUS** Osgood, 1932

1932. *Discopus* Osgood, Field Mus. Publ. Zool. *18:* 236. *Discopus denticulus* Osgood.

1 species: *Discopus denticulus,* page 151

Discopus denticulus Osgood, 1932

Approximate distribution of species: Laos, in Indo-China.

DISCOPUS DENTICULUS Osgood, 1932

1932. *Discopus denticulus* Osgood, Field Mus. Publ. Zool. *18:* 236. Phong Saly, Laos, Indo-China.

Genus **VESPERTILIO** Linnaeus, 1758

1758. *Vespertilio* Linnaeus, Syst. Nat. 10th ed. *1:* 31. *Vespertilio murinus* Linnaeus.
1839. *Vesperugo* Keyserling & Blasius, Arch. Naturg. *5,* 1: 312. Contained 13 species, one of which was *discolor* = *murinus.*
1839. *Vesperus* Keyserling & Blasius, *loc. cit.* 313 (part). Not of Latreille, 1829.
1856. *Meteorus* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131 (part). (Included several species, one of which was *discolor* = *murinus.*)
1863. *Aristippe* Kolenati, Horae Soc. Ent. Ross. *2,* 2: 40 (part; included *murinus*).
1872. *Marsipolaemus* Peters, Mber. Preuss. Akad. Wiss. 260. *Vesperugo albigularis* Peters = *Vespertilio murinus* Linnaeus.

2 species: *Vespertilio murinus,* page 152
Vespertilio superans, page 152

On this genus and all genera of Vespertilioninae except *Myotis,* see Tate, 1942, *Bull. Amer. Mus. N.H. 80:* 221–297. As restricted by Miller, this genus contains two species, *murinus* and *superans.* Kuzyakin, in Bobrinskii, 1940, *Mamm. U.S.S.R.,* shows clearly that both these forms are valid species. This author refers *Eptesicus* and *Pipistrellus* to the present genus (but keeps *Nyctalus* separate). The cranial and ear

details noted by Miller as restricting the genus to the present species are not perhaps of great importance, but the two allied genera referred to above are both so widely distributed and contain so many species that it is a matter of convenience to retain both.

Vespertilio murinus Linnaeus, 1758 Particoloured Bat

Approximate distribution of species: Norway, Sweden, Denmark, France, Germany, Czechoslovakia, Poland, Switzerland, Austria. Has been very rarely taken in England ("a single specimen, undoubtedly a straggler, taken at Plymouth" (Miller, 1912) and has more recently been recorded from the Shetland Islands (Ritchie, 1927, *Scot. Nat. Edinburgh, '101*)). Russia, from about 60° N., south to the Black Sea and Caucasus, Russian Turkestan, and across Siberia to the Ussuri district. Japan; Mongolia; Kashmir; Persia; Kashgar (Chinese Turkestan).

Bodenheimer quoted *V. murinus* from Palestine, but this is far from the normal range of the species, and it must be borne in mind that in earlier literature *Myotis myotis*, which occurs in South-Western Asia, used to be called "*Vespertilio murinus*".

Vespertilio murinus murinus Linnaeus, 1758

1758. *Vespertilio murinus* Linnaeus, Syst. Nat. 10th ed. *1:* 32. Sweden.
1819. *Vespertilio discolor* Natterer in Kuhl, Ann. Wetterau. Ges. Naturk. *4*, 2: 187. Vienna, Austria.
1853. *Vesperugo kraschenninikovi* Eversmann, Bull. Soc. Nat. Moscou, *26*, 2: 488. Orenburg, Russia.
1872. *Vesperus* (*Marsipolaemus*) *albigularis* Peters, Mber. Preuss. Akad. Wiss. 260. (Type supposed to have been taken in Mexico. See Miller, 1912, Cat. Mamm. W. Europe, 238.)
1885. *Vesperus siculus* Daday, Orv. Term. Ért. Koloszvar, *10:* 275. Homorod-Almas Cave, Hungary.
1905. *Vespertilio discolor luteus* Kastschenko, Trans. Tomsk. Univ. *27:* 102d. Nerchinsk, Transbaikalia, Eastern Siberia.
1913. *Vespertilio discolor michnoi* Kastschenko, Annu. Mus. Zool. Acad. St. Pétersb. *17:* 391. Aga, Aginska Steppe, Transbaikalia, Eastern Siberia.

Range: as in the species, except Japan.

Vespertilio (?) murinus namiyei Kuroda, 1920

1920. *Nyctalus noctula namiyei* Kuroda, Annot. Zool. Jap. *9*, 5: 601. Otsukuejima, coast of Chikuzen Province, Kiushiu, Japan.

Vespertilio superans Thomas, 1899

Approximate distribution of species: Maritime Province of Eastern Siberia; Hokkaido and Hondo; Korea; China, states of Szechuan, Fukien, Shansi, Chihli, ? Kansu; and Mongolia.

Vespertilio superans Thomas, 1899

1899. *Vespertilio murinus superans* Thomas, P.Z.S. *1898:* 770. Sesalin, Ichang, Hupeh, China.

Dobson (1878) (followed by Blanford, 1891, *Mamm. Brit. India*) called the genus now known as *Myotis* by the name *Vespertilio*, and the present genus, in a much wider sense than as accepted by Miller, "*Vesperugo*". *V. murinus* was called "*Vesperugo discolor*", and *V. murinus* of Dobson is the species now known as *Myotis myotis*.

Genus **EPTESICUS** Rafinesque, 1820

1820. *Eptesicus* Rafinesque, Annals of Nature, 2. *Eptesicus melanops* Rafinesque = *Vespertilio fuscus* Beauvois, from North America.
1829. *Cnephaeus* Kaup, Skizz. Europ. Thierw. *1:* 103. *Vespertilio serotinus* Schreber.
1837. *Noctula* Bonaparte, Faun. Ital. *1:* fasc. xxi. *Noctula serotina*.
1856. *Cateorus* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131. *Vespertilio serotinus* Schreber.
1858. *Amblyotus* Kolenati, S.B. Akad. Wiss. Wien, *29:* 252. *Amblyotus atratus* Kolenati = *Vespertilio nilssonii* Keyserling & Blasius.
1866. *Pachyomus* Gray, Ann. Mag. N.H. *17:* 90. *Scotophilus pachyomus* Tomes.
1870. *Nyctiptenus* Fitzinger, S.B. Akad. Wiss. Wien, *62:* 424. *Vespertilio smithii* Wagner, from South Africa.
1892. *Adelonycteris* H. Allen, Proc. Acad. Nat. Sci. Philadelphia, 1891: 466 (part). (Substitute for *Vesperus* Keyserling & Blasius, 1839, which is preoccupied by *Vesperus* Latreille, 1829, and contained species of both the present genus and *Vespertilio*.)
1917. *Pareptesicus* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21*: lxxvi. *Vesperugo pachyotis* Dobson.
1917. *Rhyneptesicus* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21*: lxxvi. *Vesperugo nasutus* Dobson.
1926. *Neoromicia* Roberts, Ann. Transvaal Mus. *11:* 245. *Eptesicus zuluensis* Roberts, from Natal.
1931. *Tuitatus* Kishida & Mori, Zool. Mag. Tokyo, *43:* 372–391 (*N.V.*) *nom. nud.*
1934. *Vespadelus* Iredale & Troughton, Mem. Austr. Mus. *6:* 95. Australian species of *Eptesicus*. (Nom. nud.)

This genus is nearly world-wide. It is near *Vespertilio*, and referred to that genus by Kuzyakin. It is not easy to say how many species there are in the present region, but the following seven seem certainly valid:

Eptesicus isabellinus, page 156
Eptesicus nasutus, page 154
Eptesicus nilssoni, page 155
Eptesicus pachyotis, page 155
Eptesicus serotinus, page 156
Eptesicus sodalis, page 156
Eptesicus walli, page 154

Several subgeneric names are available, but we are inclined to ignore them until more detailed revision has taken place in the genus. Chaworth-Musters, in a key to Arabian bats which he was preparing shortly before his death, suggests that *matschiei* represents the Indian *nasutus*; this is accepted. The Turkestan form *bobrinskoi* is apparently approximately the same size, and has yet to be proved specifically distinct

from *nasutus*. Kuzyakin regards the form *ognevi* as a valid species, but according to Ognev and Tate it is a race of *sodalis*. We have provisionally united the forms *innesi*, *isabellinus* and *bottae* (forearm about 40–44 mm.) under the prior name *isabellinus*. G. Allen listed *isabellinus* as a race of *serotinus*, but according to Tate's measurements (1942, 275), it is too small for that species. According to Kuzyakin (1944) some species formerly referred to this species should be transferred to *Pipistrellus savii*.

For review, see Tate (1942, 271).

Eptesicus nasutus group

Rhyneptesicus Bianchi is available if subgeneric division is required.

Eptesicus nasutus Dobson, 1877 Sind Bat

Approximate distribution of species: Sind and Punjab; Arabia, Persia; if *bobrinskoi* is the same, deserts of Kazakstan and Russian Turkestan, Northern Osetia (? Caucasus) and Yakutsk, Siberia.

Eptesicus nasutus nasutus Dobson, 1877

1877. *Vesperugo* (*Vesperus*) *nasutus* Dobson, J. Asiat. Soc. Bengal, *46*, 2: 311. Shikarpur, Sind, Western India. Range includes Punjab.

Eptesicus nasutus matschiei Thomas, 1905

1905. *Vespertilio matschiei* Thomas, Ann. Mag. N.H. *16:* 573. Jimel, near Aden, 850 m., Southern Arabia.

Eptesicus nasutus pellucens Thomas, 1906

1906. *Vespertilio matschiei pellucens* Thomas, P.Z.S. *1905*, 2: 520. Ahwaz, Karun River, 220 ft., South-Western Persia.

Eptesicus (?) nasutus bobrinskoi Kuzyakin, 1935

1935. *Eptesicus bobrinskoi* Kuzyakin, Bull. Soc. Nat. Moscou, *44:* 435–437. Tjulek wells in Aral Kara-Kum (desert), 65 km. east of city of Aralskoje More, Russian Turkestan.

Eptesicus walli group

For note on cranial characters of this species, see Tate (1942, 274).

Eptesicus walli Thomas, 1919 Wall's Serotine

Approximate distribution of species: Iraq.

Eptesicus walli Thomas, 1919

1919. *Eptesicus walli* Thomas, J. Bombay N.H. Soc. *26:* 746. Basra, Iraq.

Eptesicus pachyotis group

Pareptesicus Bianchi is available here if subgeneric division is required.

Eptesicus pachyotis Dobson, 1871 Thick-eared Bat

Approximate distribution of species: Assam.

Eptesicus pachyotis Dobson, 1871

1871. *Vesperugo (Vesperus) pachyotis* Dobson, Proc. Asiat. Soc. Bengal, 211. Khasi Hills, Assam.

Eptesicus nilssoni group

The name *Amblyotus* Kolenati is available if subgeneric division is required.

Eptesicus nilssoni Keyserling & Blasius, 1839 Northern Bat

Approximate distribution of species: Norway, Sweden, Germany, France, Switzerland, Denmark, Czechoslovakia, Northern Italy, Poland; Russia, north to Kola Peninsula; in Siberia, the northern limit drops roughly to the 60th parallel, and ranges east to the Pacific; southwards, in summer, to north of Moscow and Gorki Provinces, but in the autumn has been found in districts further south (Northern Volga, Smolensk, Eastern Carpathians) (Kuzyakin, in Bobrinskii). It occurs in Russian Turkestan. Mongolia, perhaps Manchuria, Chinese Turkestan, Korea, Tibet; Kashmir.

Eptesicus nilssoni nilssoni Keyserling & Blasius, 1839

1836. *Vespertilio kuhlii* Nilsson, Illum. Fig. Skand. Fauna, pt. 17, pl. 34, upper fig. Not of Kuhl, 1819.

1838. *Vespertilio borealis* Nilsson, Illum. Fig. Skand. Fauna, pt. 19, pl. 36, upper fig. Not of Müller, 1776.

1839. *Vespertilio nilssonii* Keyserling & Blasius, Arch. Naturgesch. *5*, 1: 315. Sweden.

1858. *Amblyotus atratus* Kolenati, S.B. Akad. Wiss. Wien, *29:* 252. Altvater, 2,400–4,600 ft., Austrian Silesia.

Range: Europe, Siberia to the Pacific, Gilgit (Kashmir).

Eptesicus nilssoni gobiensis Bobrinskii, 1926

1926. *Eptesicus nilssonii gobiensis* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 96. Burchasteitala, Gobi Altai Mountains, Mongolia. Ranges into Russian Central Asia.

Eptesicus nilssoni centrasiaticus Bobrinskii, 1926

1926. *Eptesicus nilssonii centrasiaticus* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 96. Ushchele Khatu, near Russk, Orin-Nor, Tibet.

Eptesicus nilssoni kashgaricus Bobrinskii, 1926

1926. *Eptesicus nilssonii kashgaricus* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 97. Khotan-Tagh, mountains of Russki, near Kashgar, Chinese Turkestan.

Eptesicus nilssoni parvus Kishida, 1932

1932. *Eptesicus parvus* Kishida, Lansania, Tokyo, *4*, 31: 2. North Korea. (*N.T.*)

Tate (1942) lists several forms (not seen by him) as races of *nilssoni* which are here, following Kuzyakin in Bobrinskii, transferred to *Pipistrellus savii*.

Eptesicus serotinus group

(The type species belongs here.)

Eptesicus sodalis Barrett-Hamilton, 1910

Approximate distribution of species: Rumania, Switzerland, Russian Turkestan, where widely distributed in the south and east, to South-Western Mongolia (Kuzyakin); Iraq.

Eptesicus sodalis sodalis Barrett-Hamilton, 1910

1910. *Vespertilio sodalis* Barrett-Hamilton, Ann. Mag. N.H. *5:* 291. Bustenari, Prahova, 840 m., in Carpathians, Rumania.

Eptesicus sodalis ognevi Bobrinskii, 1918

1918. *Eptesicus ognevi* Bobrinskii, Fauna & Flora of Russia, *15:* 12. (*N.E.*) Bokhara district, Russian Turkestan.

Eptesicus sodalis hingstoni Thomas, 1919

1919. *Eptesicus hingstoni* Thomas, J. Bombay N.H. Soc. *26:* 745. Baghdad, Iraq.

Eptesicus isabellinus Temminck, 1840

Approximate distribution of species: Libya, Egypt, Arabia.

Eptesicus isabellinus isabellinus Temminck, 1840

1840. *Vespertilio isabellinus* Temminck, Mon. Mamm. *2:* 205, pl. 52, figs. 1, 2. Environs of Tripoli, Libya. G. Allen listed this as a race of *serotinus*, but Tate's measurements make it too small for that.

Eptesicus isabellinus bottae Peters, 1869

1869. *Vesperus bottae* Peters, Mber. Preuss. Akad. Wiss. 406. Yemen, Arabia.

Eptesicus isabellinus innesi Lataste, 1887

1887. *Vesperugo (Vesperus) innesi* Lataste, Ann. Mus. Stor. Nat. Genova, *4:* 625, 2 text figs. Cairo, Egypt.

Eptesicus serotinus Schreber, 1774 Serotine

Approximate distribution of species: England, France, Switzerland, Spain, Italy, Sardinia, Germany, Holland, Denmark, Hungary, Yugoslavia, Rumania, Greece, Poland; Russia and Siberia, where the northern limit runs through Kharkov and Orenburg, roughly eastwards to Lake Balkash, and southwards to the Caucasus and Russian Turkestan; Persia, Asia Minor, Palestine (Bodenheimer); Chinese Turkestan, Mongolia. Korea; Shensi, Shantung and Chihli, in China, also Yunnan, Fukien and Chekiang if *andersoni* is regarded as a representative; Kashmir, Rajputana; West Africa (part).

Eptesicus serotinus serotinus Schreber, 1774

1774. *Vespertilio serotinus* Schreber, Säugeth. *1:* pl. 53 (text, p. 167). France.
1776. *Vespertilio serotine* Müller, Natursyst. Suppl. Regist. Band, 16.
1827. *Vespertilio wiedii* Brehm, Ornis, *3:* 24. Renthendorf, Thuringia, Germany.
1827. *Vespertilio okenii* Brehm, *loc. cit.* 25. Renthendorf, Thuringia, Germany.
1844. *Vespertilio incisivus* Crespon, Faune Méridionale, *1:* 26. Nimes, Gard, France.
1863. *Cateorus serotinus typus* Koch, Jb. Nassau. Ver. Naturk. *18:* 466. Wiesbaden, Nassau, Germany.
1863. *Cateorus serotinus* var. *rufescens* Koch, *loc. cit.* Freiburg, Breisgau, Germany.
1885. *Vespertilio serotinus* var. *transylvanus* Daday, Orv. Term. Ért. Koloszvar, *10:* 275. Alsó-Szöcs, Szolnok-Doboka, Hungary.
1904. *Vespertilio serotinus insularis* Cabrera, Mem. Soc. Esp. H.N. *2:* 263. Minorca, Balearic Islands.
1904. *Vespertilio isabellinus* Cabrera, Mem. Soc. Esp. H.N. *2:* 264. Andalusia, Southern Spain. Not of Temminck, 1840.
1904. *Vespertilio boscai* Cabrera, Mem. Soc. Esp. H.N. *2:* 265. Muchamiel, Alicante, Spain.

Range: Europe.

Eptesicus serotinus turcomanus Eversmann, 1840

1840. *Vespertilio turcomanus* Eversmann, Bull. Soc. Nat. Moscou, 21. Between Caspian and Aral Seas, Russian Turkestan.
(?) 1865. *Vespertilio* (*Vesperus*) *mirza* de Filippi, Viagg. in Persia, 342. Persia.
1875. *Vesperugo albescens* Karelin, Trans. St. Pétersb. Nat. Soc. *6:* 265, *nom. nud.* Sluda, near Gureva (? = Guriev, mouth of River Ural).

Range: Russian Asia and Persia.

Eptesicus serotinus pachyomus Tomes, 1857

1857. *Scotophilus pachyomus* Tomes, P.Z.S. 50. Rajputana, India. Ranges to Kashmir.

Eptesicus serotinus shiraziensis Dobson, 1871

1871. *Vesperus shiraziensis* Dobson, J. Asiat. Soc. Bengal, *40*, 2: 459. Shiraz, 4,750 ft., South-Western Persia.

Eptesicus serotinus andersoni Dobson, 1871

1871. *Vesperus andersoni* Dobson, Proc. Asiat. Soc. Bengal, 211. Momein (Tengueh), Yunnan, China. Ranges to Fukien and Chekiang, Southern China.

Eptesicus serotinus pallens Miller, 1911

1911. *Eptesicus serotinus pallens* Miller, Proc. Biol. Soc. Washington, *24:* 53. Chengyuanhsien, 70 miles west of Chingyangfu, Kansu, China.
1929. *Eptesicus serotinus pallidus* Bobrinskii, Annu. Mus. Zool. Acad. St. Pétersb. *30:* 235.

Ranges to Shensi, Chihli, Shantung, in China; and Korea.

Eptesicus serotinus meridionalis Dal Piaz, 1926

1926. *Eptesicus serotinus meridionalis* Dal Piaz, Atti Soc. Ven.-Trent. Sci. Nat. *16:* 63. Cagliari, Sardinia.

EPTESICUS SEROTINUS INTERMEDIUS Ognev, 1927

1927. *Eptesicus serotinus intermedius* Ognev, J. Mamm. *8:* 152. Murtasovo Station, near Vladikavkaz, Terek region, Northern Caucasus.

EPTESICUS SEROTINUS BRACHYDIGITUS Mori, 1928

1928. *Eptesicus brachydigitus* Mori, Zool. Mag. Tokyo, *40:* 291 (in Japanese, 21 August 1928). Annot. Zool. Jap. *2:* 391 (in English, 20 December 1928). Heijo, Heian, Nando, Korea.

Tate also lists the form *sinensis* Peters (1880) as a race of *serotinus*, but G. Allen placed it in the synonymy of *Nyctalus noctula plancei*.

Incertae sedis

Eptesicus horikawai Kishida, 1924, Zool. Mag. Tokyo, *36:* 127, 139. Formosa. (*N.V.*)

Eptesicus kobayashii Mori, 1928, Zool. Mag. Tokyo, *40:* 292 (in Japanese, 21 August 1928). Annot. Zool. Jap. *2:* 392 (in English, 20 December). Heijo, Heian, Nando, Korea.

Eptesicus aurijunctus (named as *Vespertilio aurijunctus*) Mori, 1928, Zool. Mag. Tokyo, *40:* 296 (in Japanese, 21 August 1928). Annot. Zool. Jap. *2:* 393 (in English, 20 December 1928). Keijo, Korea. (*Tuitatus aurijunctus* Kishida & Mori, 1931, Zool. Mag. Tokyo, *43:* 372–391.)

Eptesicus rananensis Kishida & Mori, Zool. Mag. Tokyo, *43:* 379, *nom. nud.* Ranan, North Korea.

EPTESICUS TATEI *nom. nov.*

1863. *Nycticcius atratus* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 31. *Eptesicus atratus auct.* but not *atratus* Kolenati, 1858, which = *nilssonii*. Darjeeling, North-Eastern India.

This form is left *incertae sedis* by Tate (1942) and until the type is re-examined it is not possible to allocate the form with certainty.

Genus **NYCTALUS** Bowdich, 1825

1825. *Nyctalus* Bowdich, Excursions in Madeira & Porto Santo, 36 (and footnote). *Nyctalus verrucosus* Bowdich.

1829. *Pterygistes* Kaup, Skizz. Europ. Thierw. *1:* 100. *Vespertilio noctula* Schreber.

1842. *Noctulinia* Gray, Ann. Mag. N.H. *10:* 258. Contained two species, one of which is a synonym of *V. noctula* Schreber.

1856. *Panugo* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131. *Vespertilio noctula* Schreber and *Vespertilio leisleri* Kuhl.

If this genus is considered congeneric with *Pipistrellus*, as by Simpson (1945), then *Nyctalus* has priority.

The five species most likely to be valid in the area covered by this list are:

Nyctalus azoreum, page 159
Nyctalus joffrei, page 159
Nyctalus lasiopterus, page 160
Nyctalus leisleri, page 159
Nyctalus noctula, page 160

Tate (1942, *Bull. Amer. Mus. N.H. 80:* 251) transferred *N. joffrei* to *Pipistrellus*, but, as remarked under that genus, we prefer tentatively to retain it in *Nyctalus*. Miller compared the other four species, all of which occur in Europe. Tate has shown that the prior name for the giant species is *lasiopterus*. Kuzyakin thought the form *aviator* was a valid species, but Tate makes it a subspecies of *lasiopterus*. From descriptions, the forms *montanus* and *verrucosus* seem very close to *leisleri*. Tate (1942, 256) states that the skull of *montanus* "exceeds considerably the measurements given by Miller for *leisleri* of Europe", but this seems an error; see Tate's table of measurements at the end of his paper.

Nyctalus joffrei group
(Referred by Tate to *Pipistrellus*.)

Nyctalus joffrei Thomas, 1915
Approximate distribution of species: Burma.

NYCTALUS JOFFREI Thomas, 1915
1915. *Nyctalus joffrei* Thomas, Ann. Mag. N.H. *15:* 225. Kachin Hills, Upper Burma.

Nyctalus noctula group
(= restricted *Nyctalus* of Tate.)

Nyctalus azoreum Thomas, 1901
Approximate distribution of species: Azores Islands, Atlantic.

NYCTALUS AZOREUM Thomas, 1901
1901. *Pterygistes azoreum* Thomas, Ann. Mag. N.H. *8:* 33. St. Michael, Azores Islands.

Nyctalus leisleri Kuhl, 1818 Lesser Noctule. Hairy-armed Bat
Approximate distribution of species: England, Ireland, Holland, France, Switzerland, Germany, Spain, Poland, Rumania; Russia, as far north as C. Volga and Moscow Province, and south to the Caucasus; Punjab, Kumaon. Perhaps represented in Madeira by *verrucosus*.

NYCTALUS LEISLERI LEISLERI Kuhl, 1818
1818. *Vespertilio leisleri* Kuhl, Ann. Wetterau Ges. Naturk. *4*, 1: 46. Hanau, Hessen-Nassau, Germany.
1818. *Vespertilio dasykarpos* Kuhl, *loc. cit.* 49, alternative name for *leisleri*.
1839. *Vespertilio pachygnathus* Michahelles, in Wagner, Schreber's Säugeth. Suppl. *1*, pl. 55b. Dalmatia.

NYCTALUS (?) LEISLERI MONTANUS Barrett-Hamilton, 1906
1906. *Pterygistes montanus* Barrett-Hamilton, Ann. Mag. N.H. *17:* 99. Mussoorie, Kumaon, Northern India.

Perhaps the following form also represents *leisleri:*

Nyctalus verrucosus Bowdich, 1825

1825. *Nyctalus verrucosus* Bowdich, Excursions in Madeira & Porto Santo, 36 (and footnote). Island of Madeira.
1906. *Nyctalus madeirae* Barrett-Hamilton, Ann. Mag. N.H. *17:* 98. Madeira.

Nyctalus noctula Schreber, 1774 Common Noctule

Approximate distribution of species: England, France, Switzerland, Spain, Italy, Norway, Sweden, Denmark, Holland, Germany, Rumania, Greece, Poland, Czechoslovakia; Russia, southwards to the Caucasus, northwards to Leningrad district and Kirov (Vyatka) Province, Western Siberia, to the Altai and Tarbagatai Mountains, Usbekistan and Semirechyia, in Russian Turkestan; Kuldja, Western Chinese Turkestan; similar forms inhabit Chihli, Szechuan, Fukien, and adjacent states in China; Japan; Nepal, Kashmir, Burma; Malay States; Persia, and Palestine according to Bodenheimer.

Nyctalus noctula noctula Schreber, 1774

1774. *Vespertilio noctula* Schreber, Säugeth. *1:* pl. 52 (text, p. 166). France.
1776. *Vespertilio lardarius* Müller, Natursyst. Suppl. Regist. Band, 15. France.
1789. *Vespertilio magnus* Berkenhout, Syn. Nat. Hist. Gt. Britain & Ireland, *1:* 1. Cambridge, England.
1789. *Vespertilio altivolans* White, N.H. & Antiq. of Selborne, 93. Selborne, Hampshire, England.
?) 1816. *Vespertilio major* Leach, Cat. Mamm. & Birds B.M. 5, *nom. nud.*
1818. *Vespertilio proterus* Kuhl, Ann. Wetterau Ges. Naturk. *4,* 1: 41. Substitute for *noctula.*
1829. *Vespertilio rufescens* Brehm, Isis, Jena, 643. Jena, Thuringia, Germany.
1844. *Vespertilio palustris* Crespon, Faune Méridionale, *1:* 22. Marshes near Nimes, Gard, France.
1869. *Vesperugo noctula* var. *minima* Fatio, Faune Vert. Suisse, *1:* 58. Geneva, Switzerland.

Range: Europe.

Nyctalus noctula labiatus Hodgson, 1835

1835. *Vespertilio labiata* Hodgson, J. Asiat. Soc. Bengal, *4:* 700. Nepal. Currently used for the form which occurs Kashmir, Darjeeling, Chin Hills (Burma) and, according to Chasen (1940), Malay States; but Tate (1942, 258) places it *incertae sedis* and states that he doubts whether it was based on a *Nyctalus.*

Nyctalus noctula plancei Gerbe, 1880

1880. *Vesperugo plancei* Gerbe, Bull. Soc. Zool. France, *5:* 71. Pekin, Chihli, China.
1880. *Vesperus sinensis* Peters, Mber. Preuss. Akad. Wiss. 258. Pekin, China.

Nyctalus noctula princeps Ognev & Worobiev, 1923

1923. *Nyctalus noctula princeps* Ognev & Worobiev, Fauna Vertebr. Mamm. Gvt. Moscou, 97. Voronej, Russia.

Nyctalus noctula velutinus G. Allen, 1923

1923. *Nyctalus velutinus* G. Allen, Amer. Mus. Nov. No. 85: 7. Futsing, Fukien, China. Rane: China, states of Fukien, Chekiang, Kiangsu, Hupeh, Szechuan. Tate is inclined to treat *plancei* and *velutinus* as a valid, slightly smaller species than *noctula*.

Nyctalus noctula meklenburzevi Kuzyakin, 1934

1934. *Nyctalus noctula meklenburzevi* Kuzyakin, Bull. Soc. Nat. Moscou, *43:* 323, 329. Tashkent, Russian Turkestan.

Nyctalus noctula motoyoshii Kuroda, 1934

1934. *Nyctalus noctula motoyoshii* Kuroda, in Siebold, Fauna Japonica (Japanese ed.), *3:* 3. (*N.V.*). Hondo, Japan.

1934. *Nyctalus noctula montanus* Kishida, Lansania, Tokyo, *6*, 52: 26. (*N.V.*). Not of Barrett-Hamilton, 1906.

Nyctalus lasiopterus Schreber, 1780 Giant Noctule

Approximate distribution of species: Switzerland, France (recorded 1932), Italy, Sicily; Russia, from Crimea and Transcaucasia as far north as Moscow Province and River Vetluga, east to Buzuluk Forest. The slightly smaller form, *aviator*, which Tate made a race, ranges widely in Japan and also occurs Shaweishan Island, off mouth of Yangtzekiang River, China (G. Allen).

We follow Tate (1942) in the use of the name *lasiopterus*. Miller called it *N. maximus*, and Ognev and Kuzyakin called it *siculus*; both are antedated by *lasiopterus*.

Nyctalus lasiopterus lasiopterus Schreber, 1780

1780. *Vespertilio lasiopterus* Schreber, in Zimmermann, Geogr. Gesch. *2:* 412. No locality. ? Northern Italy (Chaworth-Musters).

(?) 1827. *Vespertilio ferrugineus* Brehm, Ornis, *3:* 26. Renthendorf, Thuringia, Germany.

1868. *Vespertilio noctula* var. *sicula* Mina-Palumbo, Cat. Mammif. della Sicilia. (*N.V.*) Sicily.

1869. *Vesperugo noctula* var. *maxima* Fatio, Faune Vert. Suisse, *1:* 57. Amsteg, Uri, Switzerland.

Range: Europe.

Nyctalus (?) lasiopterus aviator Thomas, 1911

1840. *Vespertilio molossus* Temminck, Mon. Mamm. *2:* 269. Not of Pallas, 1767. Japan.

1911. *Nyctalus aviator* Thomas, Ann. Mag. N.H. *8:* 380. Tokyo, Hondo, Japan.

Genus **PIPISTRELLUS** Kaup, 1829

1829. *Pipistrellus* Kaup, Skizz. Europ. Thierw. *1:* 98. *Vespertilio pipistrellus* Schreber.

1838. *Romicia* Gray, Mag. Zool. Bot. *2:* 495. *Romicia calcarata* Gray = *Vespertilio kuhlii* Kuhl.

PIPISTRELLUS [*contd.*]

1856. *Hypsugo* Kolenati, Allg. Dtsch. Naturh. Ztg. *2:* 131 (*maurus* = *savii* and *kraschenini kowcii*).

1856. *Nannugo* Kolenati, *loc. cit.* Included *Vespertilio nathusii*, *V. kuhlii* and *V. pipistrellus*.

1867. *Alobus* Peters, Mber. Preuss. Akad. Wiss. 707. *Vespertilio temminckii* Cretzschmar = *Vespertilio rüppellii* Fischer. Not of Leconte, 1856.

1875. *Scotozous* Dobson, P.Z.S. 372. *Scotozous dormeri* Dobson. Valid as a subgenus.

1899. *Euvesperugo* Acloque, Faune de France, Mamm. 35 (part). (Included six species, one of which was *V. pipistrellus*.)

1902. *Ia* Thomas, Ann. Mag. N.H. *10:* 163. *Ia io* Thomas. Valid as a subgenus.

1917. *Megapipistrellus* Bianchi, Annu. Mus. Zool. St. Pëtersb. *21*: lxxvii. *Pipistrellus annectens* Dobson. Valid as a subgenus.

1926. *Eptesicops* Roberts, Ann. Transvaal Mus. *11:* 245. *Scotophilus rusticus* Tomes, from South-West Africa. Valid as a subgenus.

1946. *Vansonia* Roberts, Ann. Transvaal Mus. *20:* 304. *Pipistrellus vernayi* Roberts, from Bechuanaland. (A race of *rüppellii*, *fide* G. Allen.)

Kuzyakin, in Bobrinskii, 1944, refers this genus, and *Eptesicus*, to the earlier-named genus *Vespertilio*, stating that it is a large and extremely heterogeneous group but that the features of its individual representatives are so closely interlocked that it is not practicable to divide the group into independent genera as previous writers have done. The main difficulty seems to be that in the U.S.S.R., the small upper premolar, characteristic of *Pipistrellus*, may be absent in *Pipistrellus savii* as understood by Kuzyakin. Kuzyakin states that a number of forms have been described, classified as "species" or even "genera" (*Vesperugo caucasicus*, *Amblyotus tauricus*, *A. velox*, *Eptesicus alaschanicus*, etc.), but they have all proved to be simply types of individual and geographical variation in one species. He recognizes three forms in the U.S.S.R., *P. s. savii*, always with an upper small premolar tooth; *P. s. alaschanicus*, "half of the individuals have small upper premolar teeth and half do not", and *P. s. caucasicus*, "small upper premolar is missing in nearly all cases". In *P. savii* (Russian races) the penis is bent into the shape of an inverted L (unlike all other *Vespertilio* as understood by Kuzyakin); this is an alternative character given by this author to divide *savii* from other species, whether individually it has the small upper premolar or not. Strictly speaking, *Pipistrellus* is not more than a subgenus of *Eptesicus*, which itself might well be referred to *Vespertilio*. But whereas in Russia the suppression of these two convenience genera does not make much difference (only about a dozen species are involved), when the problem is looked at from a world point of view it becomes more difficult. For instance, *Pipistrellus* is such a major division in the Old World tropics that Tate, in his review of the Vespertilionidae, makes it typify an entire generic assemblage ("Pipistrelli"). We do not feel that American authors, or students of Africa and the Indomalayan region, would take a very good view of lumping such a large number of species into *Vespertilio*. Therefore, for convenience only, and bearing in mind that an alternative character is given which will separate *Pipistrellus savii* in the U.S.S.R. from other Russian bats, we list *Pipistrellus* and *Eptesicus*, following Miller and Tate.

Hollister has pointed out that the characters used by Miller for the genus *Scotozous*

are not of generic value. The name is currently placed in synonymy, although Tate (1942) retains it for the Indian species, *dormeri*. Surely it is at most a subgenus, and the same applies to *Ia*, as already indicated by Simpson, and suggested by Tate (p. 259).

Tate recognizes and defines 12 species groups of the present genus in the Palaearctic and Indian region, and two more, typified by the Indian *Scotozous* and *Ia*, are here added.

The 21 species most likely to be valid in the present region are:

Pipistrellus abramus, page 165
Pipistrellus affinis, page 167
Pipistrellus annectens, page 172
Pipistrellus ariel, page 171
Pipistrellus babu, page 169
Pipistrellus ceylonicus, page 167
Pipistrellus circumdatus, page 171
Pipistrellus coromandra, page 165
Pipistrellus deserti, page 169
Pipistrellus dormeri, page 172
Pipistrellus io, page 173
Pipistrellus kuhli, page 168
Pipistrellus lophurus, page 167
Pipistrellus maderensis, page 171
Pipistrellus mimus, page 166
Pipistrellus mordax, page 171
Pipistrellus nathusii, page 164
Pipistrellus pipistrellus, page 163
Pipistrellus pulveratus, page 167
Pipistrellus rüppelli, page 172
Pipistrellus savii, page 169

According to Tate, *Pipistrellus tralatitius* Horsfield (1824, *Vesperugo tralatitius* Horsfield, *Zool. Res. Java*, from Java), which was recorded from Tonkin, Indo-China, by Osgood, was based on a *Myotis*.

Tate transfers *stenopterus* and *joffrei* from *Nyctalus* to *Pipistrellus*, but we do not feel inclined to follow him in this classification, for two reasons: Miller (1907) definitely placed *stenopterus* (from Borneo) in *Nyctalus*, stating that he had examined "all the known species", and Thomas, in describing *joffrei* stated that the proportions of the digits were as in *Nyctalus* (*Nyctalus* differing from *Pipistrellus* chiefly in its shortened fifth finger).

Authors who wish to merge *Pipistrellus* with *Nyctalus* should note that *Nyctalus* takes priority.

Subgenus *PIPISTRELLUS* Kaup, 1829

Pipistrellus pipistrellus group

Pipistrellus pipistrellus Schreber, 1774 Common Pipistrelle

Approximate distribution of species: Britain, Ireland, Sweden, Denmark, Norway, France, Switzerland, Italy, Spain, Sardinia, Germany, Holland, Rumania, Yugoslavia, Poland, Greece; Russia, from the Caucasus, north roughly to the level of Moscow; Russian Turkestan, where widely distributed. Has been recorded from Japan, Formosa and Korea (Kuroda). Asia Minor (B.M.), Persia; Kashmir. Recorded from Morocco (1933).

PIPISTRELLUS PIPISTRELLUS PIPISTRELLUS Schreber, 1774

1774. *Vespertilio pipistrellus* Schreber, Säugeth. *1*, pl. 54 (text, p. 167). France.
1776. *Vespertilio pipistrelle* Muller, Natursyst. Suppl. Regist. Band, 16.
1825. *Vespertilio pygmaeus* Leach, Zool. J. *1:* 559. Dartmoor, Devonshire, England.
1834. *Vespertilio brachyotos* Baillon, Mém. Soc. Émul. Abbeville, *1833:* 50. Abbeville, Somme, France.
(?) 1838. *Scotophilus murinus* Gray, Mag. Zool. Bot. *2:* 497.
(?) 1839. *Vespertilio* (*Pipistrellus*) *pipistrellus* var. *nigra* de Sélys Longchamps, Études de Micromamm, 140, *nom. nud.*
(?) 1839. *Vespertilio* (*Pipistrellus*) *pipistrellus* var. *rufescens* de Sélys Longchamps, *loc. cit. nom. nud.* Not of Brehm, 1829.
1840. *Vespertilio pusillus* Schinz, Fauna Europ. *1:* 9.
1840. *Vespertilio melanopterus* Schinz, *loc. cit.* Renthendorf, Thuringia, Germany.
1840. *Vespertilio stenotus* Schinz, *loc. cit.*, same locality.
1840. *Vespertilio minutissimus* Schinz, *loc. cit.* Zürich, Switzerland.
(?) 1842. *Kerivoula griseus* Gray, Ann. Mag. N.H. *10:* 258. No locality.
1845. *Pipistrellus nigricans* Bonaparte, Atti della sesta Riun. degli Sci. Italiani, Milano, *1844:* 340. Sardinia.
1845. *Pipistrellus genei* Bonaparte, *loc. cit.*, alternative for *nigricans*.
1845. *Pipistrellus typus* Bonaparte, *loc cit.*, substitute for *pipistrellus*.
1862. *Vesperugo pipistrellus* var. *macropterus* Jeitteles, Verh. Zool. Bot. Ges. Wien, *12:* 250. Kaschau, Hungary.
1863. *Nannugo pipistrellus* var. *flavescens* Koch, Jb. Nassau Ver. Naturk. *18:* 491. Nassau, Germany.
1863. *Nannugo pipistrellus* var. *nigricans* Koch, *loc. cit.*, not of Bonaparte, 1845. Nassau, Germany.
1863. *Nannugo pipistrellus* var. *limbatus* Koch, *loc. cit.* 492. Siegen, Nassau, Germany.
1904. *Pipistrellus pipistrellus mediterraneus* Cabrera, Mem. Soc. Esp. H.N. *2:* 273. Valencia, Spain. (Placed in synonymy by Miller, but regarded by Tate (1942) as a race of *nathusii*.)

Range: Europe, Asia Minor, Persia.

PIPISTRELLUS PIPISTRELLUS BACTRIANUS Satunin, 1905

(?) 1840. *Vespertilio lacteus* Temminck, Mon. Mamm. *2:* 245. Locality unknown.
1873. *Vesperugo akokomuli* var. *almatensis* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 79; 1876. Ann. Mag. N.H. *18:* 42, *nom. nud.* Turkestan.
1882. *Vespertilio oxianus* Bogdanov, Outline N.H. khibinskoyo, 78, *nom. nud.* (*N.V.*)
1905. *Pipistrellus bactrianus* Satunin, Mitt. Kaukas. Mus. *2:* 67, 85. Oasis of Tedzen, Transcaspia, Russian Turkestan.

Range includes Gilgit, Kashmir.

Pipistrellus nathusii Keyserling & Blasius, 1839 Nathusius' Pipistrelle

Approximate distribution of species: France, Switzerland, Spain, Italy, Germany, Poland, Holland, Denmark, Hungary; Russia, from Leningrad and lower Vyatka River, east to Orenburg, south to Black Sea and Caucasus. ? Persia; Palestine according to Bodenheimer.

Pipistrellus nathusii Keyserling & Blasius, 1839

1839. *Vespertilio nathusii* Keyserling & Blasius, Arch. Naturgesch. *5*, 1: 320. Berlin, Germany.

1905. *Vesperugo nathusii* var. *unicolor* Fatio, Arch. Sci. Nat. Genève, *19:* 510. Geneva, Switzerland.

Pipistrellus abramus group

Pipistrellus abramus Temminck, 1840 Japanese Pipistrelle

Approximate distribution of species: Southern Ussuri region, Eastern Siberia; Japan; China, states of Chihli, Shantung, Fukien, Szechuan, Hupeh, Hunan; Hainan, Indo-China; Formosa; Java, Banka (see Tate, 1942, 237). Probably the Burmese form below may be regarded as a race.

Pipistrellus abramus abramus Temminck, 1840

1840. *Vespertilio abramus* Temminck, Mon. Mamm. *2:* 232, pl. 58, figs. 1, 2. Nagasaki, Kiushiu, Japan.

(?) 1840. *Vespertilio akokomuli* Temminck, Mon. Mamm. *2:* 233, pl. 57, figs. 8, 9. Japan.

1842. *Vespertilio irretitus* Cantor, Ann. Mag. N.H. *9:* 481. Chusan Island, Chekiang, China.

1857. *Scotophilus pumiloides* Tomes, P.Z.S. 51. China.

1922. *Scotophilus pomiloides* Mell, Arch. Naturgesch. *88a*, 10: 14.

Range: Japan and China, as above; Annam, in Indo-China.

Pipistrellus (?) abramus paterculus Thomas, 1915

1915. *Pipistrellus paterculus* Thomas, J. Bombay N.H. Soc. *24:* 32. Mt. Popa, Upper Burma. Range includes Shan States and Chindwin, Burma.

Tate also refers the following named form to the present group:

Pipistrellus camortae Miller, 1902

1902. *Pipistrellus camortae* Miller, Proc. U.S. Nat. Mus. *24:* 779. Kamorta Island, Nicobar Islands, Bay of Bengal.

Pipistrellus coromandra group

It is not impossible that the name *P. imbricatus* Horsfield, 1824, Java, is the prior name in this group.

Pipistrellus coromandra Gray, 1838 Indian Pipistrelle

Approximate distribution of species: Fukien, in Southern China, Hainan; Indo-China; Burma, Bhutan Duars, Sikkim, Kumaon, many localities in Peninsula of India, and Ceylon. Persia, if *aladdin* is rightly allocated here.

PIPISTRELLUS COROMANDRA COROMANDRA Gray, 1838

1838. *Scotophilus coromandra* Gray, Mag. Zool. Bot. *2:* 498. Pondicherry, Coromandel coast, India.

1851. *Vespertilio coromandelicus* Blyth, J. Asiat. Soc. Bengal, *20:* 159.

1853. *Myotis parvipes* Blyth, J. Asiat. Soc. Bengal, *22:* 581. Masori (? Mussoorie, Kumaon).

(?) 1855. *Vesperugo blythii* Wagner, Schreb. Säugeth. Suppl. *5:* 742. Ceylon.

1863. *Scotophilus coromandelianus* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 33.

(?) 1872. *Vesperugo micropus* Peters, P.Z.S. 708. Dehra Dun, near Simla, North-Western India. Tate lists this form as possibly valid.

Range: Ceylon, north to Kumaon and Bhutan Duars.

PIPISTRELLUS (?) COROMANDRA ALADDIN Thomas, 1905

1905. *Pipistrellus aladdin* Thomas, Abstr. P.Z.S. No. 24: 23. 1906, P.Z.S. *1905*, 2: 521. Derbent, 50 miles west of Isfahan, 6,500 ft., Persia.

PIPISTRELLUS (?) COROMANDRA PORTENSIS J. Allen, 1906

1906. *Pipistrellus portensis* J. Allen, Bull. Amer. Mus. N.H. *22:* 487. Porten, Island of Hainan.

PIPISTRELLUS COROMANDRA TRAMATUS Thomas, 1928

1928. *Pipistrellus coromandrus tramatus* Thomas, P.Z.S. 144 Thai-nien, Tonkin, Indo-China. Range includes Annam, Laos, and Fukien in Southern China. Tate suggests it may be the same as *portensis*. Anthony (1941) recorded it from Northern Burma.

Pipistrellus tenuis group

Based on *P. tenuis* Temminck, 1840, from Java (extralimital).

Pipistrellus mimus Wroughton, 1899 Indian Pygmy Pipistrelle

Approximate distribution of species: Ceylon, most of Peninsular India, Kathiawar, Palanpur, Cutch, Sind, Punjab, Sikkim, Bhutan Duars, Assam, Burma; Annam, Indo-China.

PIPISTRELLUS MIMUS MIMUS Wroughton, 1899

1899. *Pipistrellus mimus* Wroughton, J. Bombay N.H. Soc. *12:* 722. Mheskatri, Dangs, Surat district, Western India. Range: south to Ceylon, north to Kathiawar and district, Kumaon, Sikkim, east to Western Burma and Annam.

PIPISTRELLUS MIMUS GLAUCILLUS Wroughton, 1912

1912. *Pipistrellus mimus glaucillus* Wroughton, J. Bombay N.H. Soc. *21:* 769. Multan, Punjab, India. Ranges to Sind.

PIPISTRELLUS (?) MIMUS PRINCIPULUS Thomas, 1915

1915. *Pipistrellus principulus* Thomas, Ann. Mag. N.H. *15:* 231. Gauhati, Assam.

Pipistrellus affinis group

Pipistrellus affinis Dobson, 1871 Chocolate Bat

Approximate distribution of species: Bhamo (Yunnan-Burma border).

Pipistrellus affinis Dobson, 1871

1871. *Vesperugo (Pipistrellus) affinis* Dobson, Proc. Asiat. Soc. Bengal, 213. Bhamo, North-Eastern Burma. Tate also records it from the Likiang Range, Yunnan, China.

Pipistrellus pulveratus Peters, 1871

Approximate distribution of species: Szechuan, Yunnan and Fukien, in Southern China.

Pipistrellus pulveratus Peters, 1871

1871. *Vesperugo pulveratus* Peters, in Swinhoe, P.Z.S. *1870:* 618. Amoy, Fukien, China.

Pipistrellus lophurus Thomas, 1915

Approximate distribution of species: Tenasserim.

Pipistrellus lophurus Thomas, 1915

1915. *Pipistrellus lophurus* Thomas, J. Bombay N.H. Soc. *23:* 413. Maliwun, Victoria Province, Tenasserim.

Pipistrellus ceylonicus group

Pipistrellus ceylonicus Kelaart, 1852 Kelaart's Pipistrelle

Approximate distribution of species: Ceylon, Peninsula of India (where widely distributed), north to Kathiawar, Sind, Cutch, Bengal. Probably represented in Burma and Indo-China.

Pipistrellus ceylonicus ceylonicus Kelaart, 1852

1852. *Scotophilus ceylonicus* Kelaart, Prodr. Faun. Zeylan, 22. Trincomalee, Ceylon.

Pipistrellus ceylonicus indicus Dobson, 1878

1878. *Vesperugo indicus* Dobson, Cat. Chiroptera B.M. 222. Mangalore, Malabar coast, India. Range: Southern Peninsular India.

Pipistrellus ceylonicus chrysothrix Wroughton, 1899

1899. *Pipistrellus chrysothrix* Wroughton, J. Bombay N.H. Soc. *12:* 720. Mheskatri, Surat Dangs, India. Range: northwards from the range of *indicus*, south of that of *subcanus*, to Bengal.

Pipistrellus (?) ceylonicus raptor Thomas, 1904

1904. *Pipistrellus raptor* Thomas, Ann. Mag. N.H. *13*: 387. Tonkin, Indo-China.

PIPISTRELLUS (?) CEYLONICUS SHANORUM Thomas, 1915

1915. *Pipistrellus shanorum* Thomas, J. Bombay N.H. Soc. *24:* 29. Pyaunggaung, Northern Shan States, Burma.

PIPISTRELLUS CEYLONICUS SUBCANUS Thomas, 1915

1915. *Pipistrellus ceylonicus subcanus* Thomas, J. Bombay N.H. Soc. *24:* 30. Yalala, Junagadh, Kathiawar, India. Range includes Sind, Cutch, Palanpur.

Pipistrellus kuhli group

Pipistrellus kuhli Kuhl, 1819 Kuhl's Pipistrelle

Approximate distribution of species: France, Germany, Switzerland, Italy, Spain, Balearic Islands, Sardinia, Greece; Crimea, Caucasus and lower Amu-Darya, in Russian Turkestan; Asia Minor (B.M.), Persia, Afghanistan, Palestine, Arabia; Sind, Kashmir; Egypt, Algeria, Morocco. Also known from Asben, Kenya and South Africa to Transvaal, Natal and Knysna, Cape Province.

PIPISTRELLUS KUHLI KUHLI Kuhl, 1819

1819. *Vespertilio kuhlii* Kuhl, Ann. Wetterau. Ges. Naturk. *4,* 2: 199. Trieste (Italian-Yugoslavian border).

1829. *Vespertilio pipistrellus* var. *aegyptius* Fischer, Synops. Mamm. 105. Thebes, Egypt.

1830. *Vespertilio marginatus* Cretzschmar in Rüppell. Atlas Reise nördl. Afrika, Säugeth. 74, pl. 29a. "Arabia Petraea" (Sinai) and Nubia, Sudan. According to Anderson & de Winton, 1902, Zool. Egypt, Mamm. 127, from Egypt.

1835. *Vespertilio albolimbatus* Kuster, Isis, Jena, 75. Cagliari, Sardinia.

1837. *Vespertilio vispistrellus* Bonaparte, Faun. Ital, *1,* fasc. 20. Sicily.

1837. *Vespertilio alcythoe* Bonaparte, *loc. cit.* fasc. 21. Sicily. See Miller, 1912, 215.

1838. *Romicia calcarata* Gray, Mag. Zool. Bot. *2:* 495. Locality unknown.

1840. *Vespertilio ursula* Wagner, Schreb. Säugeth. Suppl. *1:* 505. Morea, Greece.

1841. *Pipistrellus marginatus* Bonaparte, Faun. Ital., *Indic. distrib.* Substitute for *albolimbatus.*

1863. *Vycticeius canus* Blyth, Cat. Mamm. Mus. Asiat. Soc. Bengal, 32. India. Tate suggests this may be a valid race.

1867. *Pipistrella minuta* Loche, Expl. Sci. Algérie, Zool., Mamm. 78. Oasis of Messad, Southern Algeria.

(?) 1867. *Scotophilus lobatus* Jerdon, Mamm. Ind. 35. Madras, India.

1872. *Vespertilio (Pipistrellus) leucotis* Dobson, J. Asiat. Soc. Bengal, *41:* 222. Rajanpur, Punjab, North-Western India.

1886. *Vespertilio kuhlii* var. *albicans* Monticelli, Atti Soc. Ital. Sci. Nat. *27:* 200. Caivano, Naples, Italy.

1886. *Vespertilio kuhlii* var. *pullatus* Monticelli, *loc. cit.* Bella Vista, near Portici, Naples, Italy.

Range: Europe, North Africa, Sind, Persia.

PIPISTRELLUS KUHLI LEPIDUS Blyth, 1845

1845. *Pipistrellus lepidus* Blyth, J. Asiat. Soc. Bengal, *14:* 340. Kandahar, Afghanistan. Ranges to Kashmir and Upper Sind frontier.

Pipistrellus kuhli ikhwanius Cheesman & Hinton, 1924

1924. *Pipistrellus kuhlii ikhwanius* Cheesman & Hinton, Ann. Mag. N.H. *14:* 549. Hufuf, Hasa, Central Arabia.

Pipistrellus kuhli pallidus Heim de Balsac, 1936

1936. *Pipistrellus kuhlii pallidus* Heim de Balsac, Bull. Biol. Paris, *21*, Suppl.: 180. Northern Sahara to the A'haggar, Algeria.

Pipistrellus babu Thomas, 1915

Approximate distribution of species: Punjab, Kumaon, Nepal, Sikkim, Bhutan Duars, Assam and Central Provinces, India.

This species is included provisionally in the *kuhli* group by Tate. It differs in having a long outer incisor, and has P 2 not so strongly displaced internally.

Pipistrellus babu Thomas, 1915

1915. *Pipistrellus babu* Thomas, J. Bombay N.H. Soc. *24:* 30. Murree, 8,000 ft., Punjab.

Pipistrellus deserti Thomas, 1902

Approximate distribution of species: Libya.

In describing this species, Thomas compared it with *P. kuhli*, from which it differed in its shorter skull and toothrow, and narrower braincase. Miller (1907) placed it in *Scotozous*, but Thomas & Hinton, 1923, *P.Z.S.* 250, confirmed Thomas's earlier opinion that it was allied to *kuhli*. Dentition as in *P. kuhli*, but size smaller.

Pipistrellus deserti Thomas, 1902

1902. *Pipistrellus deserti* Thomas, P.Z.S. *1902*, 2: 4. Mursuk, Tripoli, Libya.

Pipistrellus savii group

Pipistrellus savii Bonaparte, 1837 Savi's Pipistrelle

Approximate distribution of species: France, Switzerland, Italy, Spain, has been recorded from Germany (Breslau); Greece; Crimea, Caucasus, Turkestan (Turkmenia, Ust-Urt, Tianshan, etc.), and Ussuri region of Eastern Siberia; Mongolia; Sikkim, Assam, Burma (but Tate doubts whether the India named forms really represent the species); Canary Islands.

Kuzyakin states that the forms *caucasicus*, *tauricus*, *velox* and *alaschanicus*, hitherto regarded as small members of *Eptesicus*, represent this species.

Pipistrellus savii savii Bonaparte, 1837

1837. *Vespertilio savii* Bonaparte, Faun. Ital. *1:* fasc. 20. Pisa, Italy.
1837. *Vespertilio aristippe* Bonaparte, *loc. cit.*, fasc. 21. Sicily.
1837. *Vespertilio leucippe* Bonaparte, *loc. cit.* Sicily.
1838. *Vespertilio bonapartii* Savi, Nuovo Giorn. Lett. Pisa, *37:* 226. Pugnano, near Pisa, Italy.

PIPISTRELLUS SAVII SAVII [*contd.*]

1844. *Vespertilio nigrans* Crespon, Faune Méridionale, *1:* 24. Nimes, Gard, France.
1853. *Vespertilio maurus* Blasius, Arch. Naturgesch. *19,* 1: 35. Central chain of Alps.
1872. *Vespertilio agilis* Fatio, Faune Vert. Suisse, *1:* appendix, iii. New name for *savii.*
1904. *Vespertilio ochromixtus* Cabrera, Mem. Soc. Esp. H.N. *2:* 267, pl. 3, figs. 1 & 4. Sierra de Guadarrama, Madrid, Spain.

Range: Europe.

PIPISTRELLUS SAVII DARWINI Tomes, 1859

1859. *Scotophilus darwini* Tomes, P.Z.S. 70. Las Palmas, Canary Islands. Available if the Canary Islands form should prove distinct.

PIPISTRELLUS (?) SAVII AUSTENIANUS Dobson, 1871

1871. *Pipistrellus austenianus* Dobson, Proc. Asiat. Soc. Bengal, 213. Cherrapunjee, Khasi Hills, Assam. Range: to Shan States, Burma.

PIPISTRELLUS (?) SAVII CAUCASICUS Satunin, 1901

1901. *Vesperugo* (*Vesperus*) *caucasicus* Satunin, Zool. Anz *24:* 462. Tiflis, Caucasus. In placing this form here we follow Kuzyakin, in Bobrinskii (1944, 101). Range: to Crimea and Turkestan.

PIPISTRELLUS (?) SAVII CADORNAE Thomas, 1916

1916. *Pipistrellus cadornae* Thomas, J. Bombay N.H. Soc. *24:* 416. Pashok, 3,500 ft., Darjeeling. North-Eastern India.

PIPISTRELLUS (?) SAVII TAMERLANI Bobrinskii, 1918

1918. *Eptesicus tamerlani* Bobrinskii, Fauna & Flora Russia, *15:* 13–16. (V.F.) Baisunski Bay, Bokhara district, Russian Turkestan. Placed (as a race) in *E. caucasicus* by Ognev, which is included in *P. savii* by Kuzyakin (1944).

PIPISTRELLUS (?) SAVII PALLESCENS Bobrinskii, 1926

1926. *Eptesicus caucasicus pallescens* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 97. River Moldja, northern slope of Kotan Tagh, Southern Sinkiang. Described as a race of *caucasicus* which Kuzyakin (1944) refers to the present species.

PIPISTRELLUS (?) SAVII ALASCHANICUS Bobrinskii, 1926

1926. *Eptesicus alaschanicus* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 98. Pass of Hotin Gol, near Dinyuanin, western slope of Alashan Range, Mongolia. Ranges to Ussuri district, Eastern Siberia. Kuzyakin (1944) lists this as a valid race of *P. savii.*

PIPISTRELLUS (?) SAVII TAURICUS Ognev, 1927

1927. *Amblyotus tauricus* Ognev, J. Mamm. *8:* 153. Karadagh, Crimea. Referred to the present species by Kuzyakin (1944), but not regarded as a valid race. Perhaps = *caucasicus.*

Pipistrellus (?) savii velox Ognev, 1927

1927. *Amblyotus velox* Ognev, J. Mamm. *8:* 154. Vladivostock, Eastern Siberia. Referred to *savii* by Kuzyakin (1944) but not regarded as a valid race. Perhaps = *alaschanicus*.

The following two African species are mentioned by Tate in the present group; both are likely to be valid. *P. maderensis* was compared with *savii* by Dobson. *P. ariel* (a pygmy species, forearm 30 mm., total length of skull 11.3 mm.) differs from *P. deserti* apparently in narrower braincase and shorter toothrow; its outer upper incisor is unusually long, and it has P 2 extremely reduced, as in *P. savii*.

Pipistrellus maderensis Dobson, 1878

Approximate distribution of species: Madeira and Canary Islands.

Pipistrellus maderensis Dobson, 1878

1878. *Vesperugo maderensis* Dobson, Cat. Chiroptera B.M. 231, pl. 12, fig. 5. Island of Madeira.

Pipistrellus ariel Thomas, 1904

Approximate distribution of species: Southern Egypt.

Pipistrellus ariel Thomas, 1904

1904. *Pipistrellus ariel* Thomas, Ann. Mag. N.H. *14:* 157. Eastern Egyptian Desert, 22° N., 35° E., 2,000 ft.

Pipistrellus circumdatus group

Pipistrellus circumdatus Temminck, 1840 Large Black Pipistrelle

Approximate distribution of species: Java; Northern Burma (Anthony, 1941) and " India " (Dobson, Blanford).

Pipistrellus circumdatus Temminck, 1840

1840. *Vespertilio circumdatus* Temminck, Mon. Mamm. *2:* 214. Tapos, Java.

Pipistrellus mordax Peters, 1866

Approximate distribution of species: Java; Kumaon, Darjeeling, Calcutta, Ceylon.

Pipistrellus mordax Peters, 1866

(?) 1843. *Scotophilus maderaspatanus* Gray, List Mamm. Coll. B.M. 29, *nom. nud.* Madras, India.

1866. *Vesperugo mordax* Peters, Mber. Preuss. Akad. Wiss. 402. Java.

Subgenus *MEGAPIPISTRELLUS* Bianchi, 1916

Pipistrellus annectens Dobson, 1871 Intermediate Bat

Approximate distribution of species: Assam, and has been recorded from Sumatra.

Pipistrellus annectens Dobson, 1871

1871. *Pipistrellus annectans* Dobson, Proc. Asiat. Soc. Bengal, 213. Naga Hills, Assam.
1876. *Vesperugo annectens* Dobson, Monogr. Asiat. Chiroptera, 116.

Subgenus *SCOTOZOUS* Dobson, 1875

Tate referred only *dormeri* here, and treated the *rüppelli* group as a group of *Pipistrellus*. For note on the dental characters of the two species, see Miller, 1907, *Families & Genera of Bats*, 206.

Pipistrellus rüppelli group

Pipistrellus rüppelli Fischer, 1829 Rüppell's Bat

Approximate distribution of species: Sudan, Uganda, Angola, Bechuanaland; north to Egypt; Iraq.

Pipistrellus rüppelli ruppelli Fischer, 1829

1826. *Vespertilio temminckii* Cretzschmar, in Rüppell, Atlas Reise. nördl. Afrika, Säugeth. 17, pl. 6. Not of Horsfield, 1824.
1829. *Vespertilio rüppellii* Fischer, Synops. Mamm. 109. Dongola, Anglo-Egyptian Sudan.

Ranges north to Egypt.

Pipistrellus rüppelli coxi Thomas, 1919

1919. *Pipistrellus coxi* Thomas, J. Bombay N.H. Soc. *26:* 747. Beit Mahommad, Amara, Iraq.

Pipistrellus dormeri group

Pipistrellus dormeri Dobson, 1875 Dormer's Bat

Approximate distribution of species: India, from Cutch, Kathiawar, Bengal, Bhutan Duars, south to Bombay, Dharwar and Bellary in the Peninsula; Formosa (Kuroda).

Pipistrellus dormeri dormeri Dobson, 1875

1875. *Scotozous dormeri* Dobson, P.Z.S. 373. Bellary Hills, India. Range: as in the species, except Kathiawar, Cutch, Palanpur.

Pipistrellus dormeri caurinus Thomas, 1915

1915. *Scotozous dormeri caurinus* Thomas, J. Bombay N.H. Soc. *24:* 33. Junagadh, Kathiawar, 400 ft., India. Ranges to Cutch, Palanpur.

Subgenus *IA* Thomas, 1902

Pipistrellus io Thomas, 1902 Great Pipistrelle

Approximate distribution of species: Szechuan, Hupeh and Kweichow, China.

PIPISTRELLUS IO Thomas, 1902

1902. *Ia io* Thomas, Ann. Mag. N.H. *10:* 164. Chungyang, Southern Hupeh, China.

Another named species of *Pipistrellus* is *P. anthonyi* Tate, 1942, which is placed by him in the so-called "*Pipistrellus joffrei* group". Its status seems not absolutely clear. The species *joffrei* has hitherto been regarded as a *Nyctalus*, together with the Bornean *N. stenopterus* which Tate also refers to the "*P. joffrei* group". As noted above, we prefer for the present to leave *N. joffrei* in the genus *Nyctalus*. The proportions of the digits are not stated in the original description of *P. anthonyi*.

PIPISTRELLUS ANTHONYI Tate, 1942

1941. *Pipistrellus affinis* Anthony, Field Mus. Publ. Zool. *27:* 81. Not of Dobson, 1871.
1942. *Pipistrellus anthonyi* Tate, Bull. Amer. Mus. N.H. *80:* 252. Changyinku, 7,000 ft., Northern Burma.

Genus **GLISCHROPUS** Dobson, 1875

1875. *Glischropus* Dobson, P.Z.S. 472. *Vesperugo tylopus* Dobson.

1 species in the area covered by this list:

Glischropus tylopus, page 173

Simpson (1945) suggests that this should be included in *Pipistrellus*, and it may well be only a subgenus of that. It is, according to Tate, "an offshoot of *Pipistrellus* in which the apparatus for grasping has undergone modification".

Glischropus tylopus Dobson, 1875 Thick-thumbed Pipistrelle

Approximate distribution of species: Burma; Malay States, Sumatra, Borneo, perhaps to Philippine Islands.

GLISCHROPUS TYLOPUS Dobson, 1875

1875. *Vesperugo tylopus* Dobson, P.Z.S. 473. North Borneo. Ranges north to Karen Hills, Eastern Lower Burma.

Genus **HESPEROPTENUS** Peters, 1868

1868. *Hesperoptenus* Peters, Mber. Preuss. Akad. Wiss. 626. *Vesperus doriae* Peters, from Borneo.

2 species in the area covered by this list:

Hesperoptenus blanfordi, page 174
Hesperoptenus tickelli, page 174

These two species differ conspicuously from each other in size, *tickelli* being much the larger.

The genus as understood by Miller (1907) is characterized by the peculiar position of the second upper incisor, a character which is said to be present in both the Indian species. But Miller, and subsequent authors, do not seem to have examined the type species, and it may be that this genus will prove untenable in the sense in which it is at present accepted. Tate (1942) notes that *blanfordi* has a digital adaptation similar to that of *Glischropus*.

Hesperoptenus tickelli Blyth, 1851 Tickell's Bat

Approximate distribution of species: India—Rajputana, Orissa, Bombay, Madras, Ceylon, Bengal, Bhutan Duars. (Blanford also quoted it from the Andaman Islands and Moulmein district, Burma.)

HESPEROPTENUS TICKELLI Blyth, 1851

1851. *Nycticejus tickelli* Blyth, J. Asiat. Soc. Bengal, *20:* 157. Chaibassa, Orissa, India (Wroughton, 1918).

(?) 1851. *Nycticejus isabellinus* Horsfield, Cat. Mamm. Mus. E. Ind. Co. 38. No locality.

Hesperoptenus blanfordi Dobson, 1877 Blanford's Bat

Approximate distribution of species: Tenasserim, Malay Peninsula.

HESPEROPTENUS BLANFORDI Dobson, 1877

1877. *Vesperugo (Hesperoptenus) blanfordi* Dobson, J. Asiat. Soc. Bengal, *46*, 2: 312. Tenasserim.

Genus **TYLONYCTERIS** Peters, 1872

1872. *Tylonycteris* Peters, Mber. Preuss. Akad. Wiss. 703. *Vespertilio pachypus* Temminck.

2 species in the area covered by this list:

Tylonycteris pachypus, page 174
Tylonycteris robustula, page 175

Review: Tate, 1942, *Bull. Amer. Mus. N.H. 80:* 266, wherein two groups of species a larger and a smaller are shown to occur together.

Tylonycteris pachypus Temminck, 1840 Club-footed Bat

Approximate distribution of species: Yunnan and ? Kwantung, in Southern China, Burma, Manipur, Sikkim; Dharwar, southwards to Coorg in South-Western India; Tonkin, Laos and Annam, in Indo-China, Malay States, Borneo, Java, Bali, Sumatra (Tate), to Luzon, Philippine Islands. Blanford also quoted it from the Andaman Islands.)

(Tylonycteris pachypus pachypus Temminck, 1840. Extralimital)

1840. *Vespertilio pachypus* Temminck, Mon. Mamm. *2:* 217, pl. 54, figs. 4–5–6. Bantam, Western Java.

Tylonycteris pachypus fulvida Blyth, 1859

1859. *Scotophilus fulvidus* Blyth, J. Asiat. Soc. Bengal, *28:* 293. Schwegyin, Sittang River, South-Eastern Burma.

1915. *Tylonycteris rubidus* Thomas, Ann. Mag. N.H. *15:* 227 (error for *fulvidus*).

Range: Sikkim, Manipur, Chin Hills, Shan States, Pegu, Tenasserim, Yunnan, Laos, Tonkin, Annam.

Tylonycteris pachypus aurex Thomas, 1915

1915. *Tylonycteris aurex* Thomas, Ann. Mag. N.H. *15:* 228. Astoli, Belgaum, south of Bombay, India. Range: Dharwar, Kanara, Coorg, in Peninsular India.

Tylonycteris robustula Thomas, 1915

Approximate distribution of species: Yunnan, China; Laos and Annam, Indo-China; Malay Peninsula, Sumatra, Java, Borneo, Bali, Celebes, Timor.

Tylonycteris robustula Thomas, 1915

1915. *Tylonycteris robustula* Thomas, Ann. Mag. N.H. *15:* 227. Upper Sarawak, Borneo.

Genus **BARBASTELLA** Gray, 1821

1821. *Barbastella* Gray, London Med. Repos. *15:* 300. *Vespertilio barbastellus* Schreber.

1839. *Synotus* Keyserling & Blasius, Arch. Naturgesch. *5,* 1: 305. *Vespertilio barbastellus* Schreber.

2 species: *Barbastella barbastellus*, page 175
Barbastella leucomelas, page 176

Two closely allied species are currently admitted. We follow the classification of Tate, 1942, *Bull. Amer. Mus. N.H. 80:* 264–265, but a change of name is necessary. Tate made *leucomelas* a race of *darjelingensis*, but the former antedates the latter.

Barbastella barbastellus Schreber, 1774 Barbastelle

Approximate distribution of species: England, France, Switzerland, Spain, Italy (Ognev), Norway, Sweden, Germany, Holland, Denmark, Poland; Russia (Ukraine, Crimea, Caucasus and Transcaucasia).

Barbastella barbastellus Schreber, 1774

1774. *Vespertilio barbastellus* Schreber, Säugeth. *1:* pl. 55 (text, p. 168). Burgundy, France.

1776. *Vespertilio barbastelle* Müller, Natursyst. Suppl. Regist. Band, 17. Burgundy, France.

1836. *Barbastellus daubentonii* Bell, Hist. Brit. Quad. *1:* 63. Burgundy, France.

1838. *Barbastellus communis* Gray, Mag. Zool. Bot. *2:* 495. Renaming of *barbastellus*.

Barbastella leucomelas Cretzschmar, 1826

Approximate distribution of species: Sinai; Caucasus, Transcaucasia, Russian Turkestan (regions of Tashkent and Murgab Oasis), Chinese Turkestan (Yarkand), Yunnan, Szechuan and Kansu, in China; Hondo, Japan; Nepal, Punjab, Sikkim, Bhutan Duars, Rajputana (also Gilgit and Assam, according to Blanford); Indo-China.

Barbastella leucomelas leucomelas Cretzschmar, 1826

1826. *Vespertilio leucomelas* Cretzschmar, in Rüppell, Atlas Reise nördl. Afrika, Säugeth. 73, pl. 28b. Arabia Petraea (= Sinai).

Barbastella leucomelas darjelingensis Hodgson, 1855

1855. *Plecotus darjelingensis* Hodgson, in Horsfield, Ann. Mag. N.H. *16:* 103. Darjeeling, North-Eastern India. (Wroughton and Tate gave Nepal.)
1875. *Barbastellus dargelinensis* Dobson, Proc. Asiat. Soc. Bengal, 85.
1908. *Barbastella barbastella caspica* Satunin, Mitt. Kaukas. Mus. *4:* 43, 104. Kubaly, River Pirsagat, Transcaucasia.
1916. *Barbastella walteri* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21:* lxxv. Transcaspia.
1916. *Barbastella blanfordi* Bianchi, *loc. cit.* Renaming of *darjelingensis*.

Range: as in the species, except Sinai.

Genus **NYCTICEIUS** Rafinesque, 1819

1819. *Nycticeius* Rafinesque, J. Physique, *88:* 417. *Nycticeius humeralis* Rafinesque from North America.
1824. *Nycticejus* Temminck, Mon. Mamm. *1:* xviii.
1827. *Nycticeus* Lesson, Man. Mamm. 98.
1830 *Nycticeyx* Wagler, Nat. Syst. Amph. 13.
1875. *Scoteinus* Dobson, P.Z.S. 371. *Nycticejus emarginatus* Dobson. Valid as a subgenus.

3 species in the area covered by this list:

Nycticeius emarginatus, page 177
Nycticeius pallidus, page 177
Nycticeius schlieffeni, page 177

Hollister, 1918, *Bull. U.S. Nat. Mus. 99:* 93, stated that the Old World species of bats, usually placed in *Scoteinus*, did not seem to differ generically from the American species of *Nycticeius*, and Simpson (1945, 59) places *Scoteinus* in *Nycticeius*. We follow these authors. *N. emarginatus* is larger than the other two species referred here. A comparison of these can be obtained from Dobson (1878), who placed them in different genera. But Miller (1907) considered them congeneric.

Subgenus *SCOTEINUS* Dobson, 1875

Nycticeius schlieffeni Peters, 1859 Schlieffen's Bat

Approximate distribution of species: Arabia, Egypt, Sudan, Abyssinia, Kenya, Eastern Congo, south to South-West Africa and Portuguese East Africa.

Nycticeius schlieffeni schlieffeni Peters, 1859

1859. *Nycticejus schlieffenii* Peters, Mber. Preuss. Akad. Wiss. 224. Cairo, Egypt.

Nycticeius (?) schlieffeni bedouin Thomas & Wroughton, 1908

1908. *Scoteinus bedouin* Thomas & Wroughton, P.Z.S. 540. Lahej, Aden, South-Western Arabia.

Nycticeius pallidus Dobson, 1876 Yellow Desert Bat

Approximate distribution of species: Northern Sind and Punjab, India.

Nycticeius pallidus Dobson, 1876

(?) 1834. *Vespertilio noctulinus* Geoffroy, in Bélanger, Voy. aux Indes-Orientales. . . . Zool, 92, pl. 3. Bengal. This, if identifiable, may be the first name for *pallidus*. (See Tate, 1942, 282.)

1876. *Scotophilus pallidus* Dobson, Monogr. Asiat. Chiroptera, Appendix D, 186. Mian Mir, near Lahore, Punjab, North-Western India.

Nycticeius emarginatus Dobson, 1871 Large-eared Yellow Bat

Approximate distribution of species: thought to be from some part of India.

Nycticeius emarginatus Dobson, 1871

1871. *Nycticejus emarginatus* Dobson, Proc. Asiat. Soc. Bengal, 211. ? India.

Genus **SCOTOMANES** Dobson, 1875

1875. *Scotomanes* Dobson, P.Z.S. 371. *Nycticejus ornatus* Blyth.

1 species: *Scotomanes ornatus*, page 177

Scotomanes ornatus Blyth, 1851 Harlequin Bat

Approximate distribution of species: Szechuan, Yunnan, eastwards to Fukien and adjacent states in Southern China; Sikkim, Bengal, Assam, perhaps Northern Burma.

Scotomanes ornatus ornatus Blyth, 1851

1851. *Nycticejus ornatus* Blyth, J. Asiat. Soc. Bengal, *20:* 517. Cherrapunji, Khasi Hills, Assam.

1855. *Nycticejus nivicolus* Hodgson, in Horsfield, Ann. Mag. N.H. *16:* 104. Northern region of Sikkim Himalayas.

SCOTOMANES ORNATUS SINENSIS Thomas, 1921

1921. *Scotomanes ornatus sinensis* Thomas, J. Bombay N.H. Soc. *27:* 772. Kuatun, North-Western Fukien, China. Range: recorded from Szechuan, Hunan, Kwangsi, Kwantung, Fokien, Southern China.

SCOTOMANES ORNATUS IMBRENSIS Thomas, 1921

1921. *Scotomanes ornatus imbrensis* Thomas, J. Bombay N.H. Soc. *27:* 772. Khonshnong, Jaintia Hills, 3,000 ft., Assam.

Genus **SCOTOPHILUS** Leach, 1821

1821. *Scotophilus* Leach, Trans. Linn. Soc. London, *13*: 69. *Scotophilus kuhlii* Leach.

1831. *Pachyotus* Gray, Zool. Misc. No. 1, 38. *Scotophilus kuhlii* Leach.

? 1942. *Parascotomanes* Bourret, C.R. Conseil Rech. Sci. Indochine, *1942*, 2: 23. *Scotomanes* (*Parascotomanes*) *beaulieui* Bourret.

2 species in the area covered by this list:
Scotophilus heathi, page 179
Scotophilus temmincki, page 178

The earliest name in this genus is *S. nigrita* Schreber, 1774, from Senegal. It has a wide range in Tropical Africa, but we have not heard of its being recorded from Palaearctic Africa. It is, from Dobson's notes, not very widely removed from the Indomalayan species.

Tate, 1942, *Bull. Amer. Mus. N.H. 80:* 283, reviews the Indomalayan species at some length. The earliest name is *Scotophilus kuhli* Leach, 1821 (*Trans. Linn. Soc. London, 13*: 72, locality unknown). Tate is, however, unable to identify this form specifically, and states that it was based on a juvenile specimen. We here follow the classification of Tate, who regards two species as valid: a larger and a smaller, occurring side by side in parts of their ranges. We accept Tate's statement that the name *kuhli* is not at the moment certainly identifiable specifically.

Scotophilus temmincki Horsfield, 1824 — Lesser Yellow Bat

Approximate distribution of species: Hainan, Formosa; Ceylon, Peninsula of India, where widely distributed, north to Kathiawar, Palanpur, Bengal, Kumaon, Sikkim, Bhutan Duars; Mt. Popa, in Burma, Tenasserim; Siam, Annam, in Indo-China, Malay States, Java, Bali, Borneo, Philippines. (Bodenheimer listed "*Scotophilus ? temmincki*" from Palestine, which is far out of its normal range.)

SCOTOPHILUS TEMMINCKI TEMMINCKI Horsfield, 1824. Extralimital.

1824. *Vespertilio temmincki* Horsfield, Zool. Res. Java, (8). Western Java.

SCOTOPHILUS TEMMINCKI CASTANEUS Gray, 1838

1838. *Scotophilus castaneus* Gray, Mag. Zool. Bot. *2:* 498. Malacca. Range includes Borneo, Annam and Tenasserim.

Scotophilus temmincki wroughtoni Thomas, 1897

1897. *Scotophilus wroughtoni* Thomas, J. Bombay N.H. Soc. *11:* 275. Kim, Surat district, Western India. Range: Ceylon and India, as above, east to Mt. Popa, Burma.

Scotophilus temmincki consobrinus J. Allen, 1906

(?) 1860. *Nycticejus* (?) *swinhoei* Blyth, J. Asiat. Soc. Bengal, *29:* 88. Amoy, Southern China.

1906. *Scotophilus castaneus consobrinus* J. Allen, Bull. Amer. Mus. N.H. *22:* 485. Rintoi, Island of Hainan.

Range includes Formosa.

Scotophilus temmincki gairdneri Kloss, 1917

1917. *Scotophilus gairdneri* Kloss, J.N.H. Soc. Siam, *2:* 284. Paknampo, Central Siam.

Scotophilus heathi Horsfield, 1831 Greater Yellow Bat

Approximate distribution of species (as understood by Tate (1942), i.e. containing both the very large and the medium-sized Indomalayan *Scotophilus*): Yunnan (and possibly parts of South-Eastern China), Hainan; Burma, Bhutan Duars, Sikkim, Bengal, Kumaon, Central Provinces, Cutch, Sind, Palanpur, Rajputana, Bombay, Peninsular India generally, to Ceylon; Kashmir; Tonkin and Annam, in Indo-China, Lower Siam, and evidently Celebes.

Scotophilus heathi heathi Horsfield, 1831

1831. *Nycticejus heathii* Horsfield, P.Z.S. 113. Madras, India. Range includes Rajputana and Ceylon (Tate).

Scotophilus heathi belangeri I. Geoffroy, 1834

1834. *Vespertilio belangeri* Geoffroy, in Bélanger, Voyage aux Indes-Orientales, Zool. 87. Towns near Pondicherry, Coromandel coast, India.

1851. *Nycticejus luteus* Blyth, J. Asiat. Soc. Bengal, *20:* 157. "Bengal; Coromandel, India."

1851. *Scotophilus flaveolus* Horsfield, Cat. Mamm. Mus. E. Ind. Co. 37. "Many parts of Continental India."

Probably *Scotophilus kuhli* of Wroughton's Indian Mammal Survey summary should be referred here, but in view of Tate's recent classification of the genus, revision of Indian specimens is much needed.

Wroughton quoted *kuhli* from Ceylon (but he did not quote *heathi* from there), many localities in Peninsular India, Bengal, Sind, Cutch, Palanpur, Central Provinces, Kumaon, Sikkim, Bhutan Duars, Western, Eastern and Central Burma. Other localities are Yunnan (*kuhli* of G. Allen, 1938), Siam, and Tate quoted a specimen of fairly similar size from Kashmir.

Scotophilus heathi insularis J. Allen, 1906

1906. *Scotophilus kuhlii insularis* J. Allen, Bull. Amer. Mus. N.H. *22:* 485. Rintoi, Island of Hainan.

(?) *Scotophilus incertae sedis.*

(?) SCOTOPHILUS BEAULIEUI Bourret, 1942

1942. *Scotomanes* (*Parascotomanes*) *beaulieui* Bourret, C.R. Conseil Rech. Sci. Indochine, *1942*, 2: 23. Tran-Ninh, Indo-China.

Genus **OTONYCTERIS** Peters, 1859

1859. *Otonycteris* Peters, Mber. Preuss. Akad. Wiss. 223. *Otonycteris hemprichii* Peters.

1 species: *Otonycteris hemprichi*, page 180

There is probably only one valid species in this genus.

Otonycteris hemprichi Peters, 1859 Hemprich's Long-eared Bat

Approximate distribution of species: Russian Turkestan (from Turkmenia to the Hissar-Alai, Western Tianshan and Pamir Mountains); Persia, Iraq, Palestine (Asia Minor, according to Kuznetzov), Arabia; Kashmir (Gilgit); Egypt to Algeria.

OTONYCTERIS HEMPRICHI HEMPRICHI Peters, 1859

1859. *Otonycteris hemprichii* Peters, Mber. Preuss. Akad. Wiss. 223. No locality. (Hemprich & Ehrenberg's collection; probably from some part of North-Eastern Africa.)

1866. *Plecotus ustus* Fitzinger & Heuglin, S.B. Akad. Wiss. Wien, *54*, 1: 546. Wadi Halfa, in Baten-el-Hadjar, Egypt. *Nom. nud.*

1873. *Plecotus leucophaeus* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 18. N.W. Turkestan. See also Severtzov, 1876, Ann. Mag. N.H. *18:* 42.

1873. *Plecotus auritus brevimanus* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 79. See also Ann. Mag. N.H. *18:* 42, 1876. *Nec* Jenyns, 1829.

(?) 1902. *O*(*tonycteris*) *petersi* Anderson & de Winton, Zool. Egypt, Mamm. 120, pl. 18, fig. 3. Fao, Persian Gulf. Status *fide* Ognev.

1936. *Plecotus auritus saharae* Laurent, Bull. Soc. Hist. Nat. Afr. N. *27:* 408. El Golea, Algeria.

Range: Russian Turkestan, Gilgit, Palestine, Egypt to Algeria.

OTONYCTERIS (?) HEMPRICHI CINEREA Satunin, 1909

1909. *Otonycteris cinereus* Satunin, Mitt. Kaukas. Mus. *4:* 281, 297. Village of Nukendzaga, District of Ge, Persian Baluchistan.

OTONYCTERIS (?) HEMPRICHI JIN Cheesman & Hinton, 1924

1924. *Otonycteris jin* Cheesman & Hinton, Ann. Mag. N.H. *14:* 549. Hufuf Town, Hasa, Arabia.

Genus **PLECOTUS** Geoffroy, 1818

(?) 1816. *Macrotus* Leach, Cat. Mamm. & Birds B.M. 5, *nom. nud. Macrotus europaeus* Leach.

1818. *Plecotus* Geoffroy, Description de l'Egypte, *2:* 112. *Vespertilio auritus*, Linnaeus.

1 species: *Plecotus auritus*, page 181

Plecotus auritus Linnaeus, 1758 Long-eared Bat

Approximate distribution of species: Britain, Ireland, France, Spain, Italy, Switzerland, Sweden, Norway, Denmark, Holland, Germany, Yugoslavia, Czechoslovakia, Finland, Poland; Russia, from about 60–62° N., south to the Caucasus, east across Siberia to Kamtchatka and Sakhalin, Russian Turkestan; Japan, Kashgar (Chinese Turkestan), Tsaidam, Mongolia, China (states of Chihli, Kansu, Szechuan); Kashmir, Punjab, Kumaon, Nepal; Palestine, Persia, according to Kuzyakin; Egypt to Northern Sudan, Tunis, Algeria; Teneriffe (Canary Islands).

Tate, 1942, *Bull. Amer. Mus. N.H. 80:* 231, suggests there are three species in Eurasia: *P. auritus* (with races *homochrous* (synonym *puck*) and *sacrimontis* (synonym *ognevi*); *P. ariel* (with race *wardi* (synonym *kozlovi*)), and *P. mordax.*

PLECOTUS AURITUS AURITUS Linnaeus, 1758

1758. *Vespertilio auritus* Linnaeus, Syst. Nat. 10th ed. *1:* 32. Sweden.
1816. *Macrotus europaeus* Leach, Cat. Spec. Indig. Mamm. etc. B.M. 5, *nom. nud.*
1825. *Vespertilio otus* Boie, Isis, Jena, 1206. Copenhagen, Denmark.
1826. *Vespertilio cornutus* Faber, Isis, Jena, 515. Jutland, Denmark.
1827. *Plecotus communis* Lesson, Man. de Mamm. 95. France.
1829. *Plecotus brevimanus* Jenyns, Trans. Linn. Soc. London, *16:* 55. Grunty Fen, Isle of Ely, Cambridgeshire, England.
1829. *Plecotus vulgaris* Desmarest, Faune Française (19) Mamm. 18. France.
1829. *Vespertilio auritus austriacus* Fischer, Synops. Mamm. 117. Vienna, Austria.
(?) 1832. *Plecotus peronii* I. Geoffroy, Mag. Zool. Paris, *2,* 1: 2 (not numbered), pls. 2–3.
1832. *Plecotus velatus* I Geoffroy, Mag. Zool. Paris, *2,* 1, pl. 2, p. 5 (not numbered), footnote.
(?) 1838. *Plecotus bonapartii* Gray, Mag. Zool. Bot. *2:* 495, *nom. nud.*
1840. *Plecotus megalotos* Schinz, Europ. Fauna, *1:* 19.
1860. *Plecotus kirschbaumii* Koch, Ber. Oberhess. Ges. Nat.-u. Heilk. *8:* 40. Dillenberg, Oberhessen, Germany.
1863. *Plecotus auritus* var. *typus* Koch, Jb. Nassau. Ver. Naturk. *18:* 406. Wiesbaden, Nassau, Germany.
1863. *Plecotus auritus* var. *montanus* Koch, *loc. cit.* Westerwald, Nassau, Germany.
1863. *Plecotus auritus* var. *brevipes* Koch, *loc. cit.* 407. Substitute for *kirschbaumii.*

Range: Europe, Siberia, eastwards to Kamtchatka and Sakhalin.

PLECOTUS AURITUS CHRISTIEI Gray, 1838

1829. *Vespertilio auritus aegyptius* Fischer, Synops. Mamm. 117, not *Vespertilio pipistrellus* var. *aegyptius* Fischer, *ibid.* 105.
1838. *Plecotus christii* Gray, Mag. Zool. Bot. *2:* 495. North Africa.
1878. *Plecotus aegyptiacus* "I. Geoff.", Dobson, Cat. Chiroptera B.M. 178. Egypt. (See Thomas, 1911, P.Z.S. 160.)

Range: Egypt, to Aswan and Northern Sudan; Tunis; Palestine.

PLECOTUS AURITUS HOMOCHROUS Hodgson, 1847

1847. *Plecotus homochrous* Hodgson, J. Asiat. Soc. Bengal, *16:* 895. Nepal. Ranges to Kumaon.

PLECOTUS AURITUS TENERIFFAE Barrett-Hamilton, 1907

1907. *Plecotus teneriffae* Barrett-Hamilton, Ann. Mag. N.H. *20:* 520. Orotava, Island of Teneriffe.

PLECOTUS AURITUS PUCK Barrett-Hamilton, 1907

1907. *Plecotus puck* Barrett-Hamilton, Ann. Mag. N.H. *20:* 521. Murree, 7,500 ft., Punjab, India. ? Synonym of *homochrous* (Tate).

PLECOTUS AURITUS SACRIMONTIS G. Allen, 1908

1908. *Plecotus sacrimontis* G. Allen, Bull. Mus. Comp. Zool. Harvard, *52:* 50. Mt. Fuji, Japan.

1927. *Plecotus auritus ognevi* Kishida, Zool. Mag. Tokyo, *39:* 418. North Sakhalin.

PLECOTUS AURITUS WARDI Thomas, 1911

1911. *Plecotus wardi* Thomas, Ann. Mag. N.H. *7:* 209. Leh, Ladak, Kashmir. Range includes high parts of the Caucasus, according to Kuzyakin, also Russian Turkestan; and probably Zungaria.

PLECOTUS AURITUS ARIEL Thomas, 1911

1911. *Plecotus ariel* Thomas, Abstr. P.Z.S. 3; P.Z.S. 160. Tatsienlu, 8,400 ft., Szechuan, China.

PLECOTUS AURITUS KOZLOVI Bobrinskii, 1926

1926. *Plecotus auritus kozlovi* Bobrinskii, C.R. Acad. Sci. U.R.S.S., A, 98. Barun Zasak, Eastern Tsaidam, Chinese Central Asia. Range includes Gobi, Mongolia.

PLECOTUS AURITUS MORDAX Thomas, 1926

1926. *Plecotus mordax* Thomas, Ann. Mag. N.H. *18:* 306. Kashgar, Chinese Turkestan.

PLECOTUS AURITUS MERIDIONALIS Martino, 1940

1940. *Plecotus auritus meridionalis* Martino, Ann. Mag. N.H. *5:* 494. Sueti Miklavz pri Ormozu, Slovenia, Yugoslavia.

SUBFAMILY Miniopterinae

Genus **MINIOPTERUS** Bonaparte, 1837

1837. *Miniopterus* Bonaparte, Fauna Ital. *1:* fasc. 20, under *Vespertilio emarginatus*. *Vespertilio ursinii* Bonaparte = *Vespertilio schreibersii* Kuhl.

1866. *Miniopteris* Gray, Ann. Mag. N.H. *17:* 91.

1892. *Minyopterus* Winge, Jordfundne og nulevende Flagermus (Chiroptera) fra Lagoa Santa, Minas Geraes, Brasilien, 36.

1900. *Minneopterus* Lampe, Jb. Nassau. Ver. Naturk, *53*, Catal. Säugeth. Samml. 12.

2 species in the area covered by this list:

Miniopterus australis, page 184
Miniopterus schreibersi, page 183

In this genus we follow Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 568.

Miniopterus schreibersi Kuhl, 1819 Schreibers' Bat. Long-winged Bat

Approximate distribution of species: Spain, France, Switzerland, Italy, Germany, Hungary, Poland, Sardinia, Montenegro, Bulgaria, Greece, Crete; Crimea, Caucasus and Kopet-Dag Mountains, South-West Russian Turkestan; Northern Persia, Palestine; Japan, Liukiu Islands, Formosa, China (states of Chihli, Chekiang, Fukien, etc.), Hainan; Ceylon, Peninsular India (Western Ghats), Kumaon, Nepal, Mt. Popa, in Burma; Java, Sumatra, Borneo, Philippine Islands, to New Guinea and Northern Australia; Algeria.

Miniopterus schreibersi schreibersi Kuhl, 1819

1819. *Vespertilio schreibersii* Kuhl, Ann. Wetterau. Ges. Naturk. *4*, 2: 185. Kulmbazer Cave, mountains of Southern Bannat, Hungary.
1837. *Vespertilio ursinii* Bonaparte, Faun. Ital. *1:* fasc. 21. Monte Corno, Ascoli, Italy.
1840. *Vespertilio orsinii* Temminck, Mon. Mamm. *2:* 179. Modification of *ursinii*.
1926. *Miniopterus schreibersii italicus* Dal Piaz, Atti Soc. Ven.-Trent. Sci. Nat. *16:* 61. Arma del Frate, Foligno, near Finalese, Liguria, Italy.
1936. *Miniopterus schreibersii inexspectatus* Heinrich, Mitt. Naturw. Inst. Sofia, *9:* 34. Strandja-Balkan, Bulgaria.

Range: Europe, Algeria.

Miniopterus schreibersi fuliginosus Hodgson, 1835

1835. *Vespertilio fuliginosa* Hodgson, J. Asiat. Soc. Bengal, *4:* 700. Nepal.
1906. *Miniopterus schreibersi japoniae* Thomas, P.Z.S. *1905*, 2: 338. Tano, Miyasaki Ken, Kiushiu, 500 ft., Japan.
1923. *Miniopterus schreibersii parvipes* G. Allen, Amer. Mus. Nov. No. 85: 7. Yenping, Fukien, Southern China.

Range: Nepal, Ceylon, Southern India, Burma; Fukien and Hunan, in China; Hainan; Japan.

Miniopterus schreibersi blepotis Temminck, 1840

1840. *Vespertilio blepotis* Temminck, Mon. Mamm. *2:* 212. Java.
1902. *Miniopterus fuscus* Bonhote, Nov. Zool. *9:* 626. Okinawa, Liukiu Islands.
1924. *Miniopterus fuscus yayeyamae* Kuroda, New Mamm. Riukiu Islands, 6. Ishigaki-Mura, Ishigaki, Liukiu Islands.

Range: Liukiu Islands, also Sumatra, Java, Borneo, Philippine Islands.

Miniopterus schreibersi pallidus Thomas, 1907

1907. *Miniopterus schreibersii pallidus* Thomas, Ann. Mag. N.H. *20:* 197. Southern shore of Caspian Sea, Northern Persia. Range: to Transcaspia (Ognev).

Miniopterus schreibersi chinensis Thomas, 1908

1908. *Miniopterus schreibersi chinensis* Thomas, P.Z.S. 638. Thirty miles west of Pekin, Chihli, North-Eastern China. Range includes Chekiang, China.

Miniopterus australis Tomes, 1858

Approximate distribution of species: Nicobar Islands, Madras, India, Hainan. Also Java, Borneo, Philippine Islands, Amboina, Loyalty Islands, etc.

(MINIOPTERUS AUSTRALIS AUSTRALIS Tomes, 1858. Extralimital)

1858. *Miniopterus australis* Tomes, P.Z.S. 125. Loyalty Islands (21° S., 167.30° E., South Pacific). Ranges to New Guinea.

MINIOPTERUS AUSTRALIS PUSILLUS Dobson, 1876

1876. *Miniopterus pusillus* Dobson, Monogr. Asiat. Chiroptera, 162. Madras, India (Tate). But Wroughton gave Nicobar Islands as type locality. Range: Madras, Nicobar Islands, Hainan and Borneo (Tate).

SUBFAMILY Murininae

For review, see Tate, 1941, *Bull. Amer. Mus. N.H. 78:* 575.

Genus **MURINA** Gray, 1842

1842. *Murina* Gray, Ann. Mag. N.H. *10:* 258. *Vespertilio suillus* Temminck, from Java.
1842. *Ocypetes* Lesson, Nouv. Tabl. Règne Anim. 30 (part). Not of Wagler, 1832.
1915. *Harpiola* Thomas, Ann. Mag. N.H. *16:* 309. *Murina grisea* Peters. Valid as a subgenus.

Tate (1941, 577) gave a key to the species groups. These, in the region now under discussion, amount to five, one of which is subgenerically (or generically) separated as *Harpiola* on account of some dental characters. Far too many species are standing in the genus. Tate has shown clearly how the groups can be divided, and until the contrary is proved we propose to assume that the other named forms are races respectively of the five names listed below:

Murina aurata, page 184
Murina cyclotis, page 186
Murina grisea, page 186
Murina huttoni, page 186
Murina leucogaster, page 185

Subgenus *MURINA* Gray, 1842

Murina aurata Milne-Edwards, 1872 Little Tube-nosed Bat

Approximate distribution of species: Ussuri district of South-Eastern Siberia, Japan, Szechuan and Yunnan (in China), Sikkim, Burma.

MURINA AURATA AURATA Milne-Edwards, 1872

1872. *Murina aurata* Milne-Edwards, Rech. H.N. Mamm. 250, pl. 37b, fig. 1; pl. 37c, fig. 2. Moupin, Szechuan, China. Ranges to Yunnan, China, and Sikkim according to Wroughton.
1907. *Murina aurita* Miller, Bull. U.S. Nat. Mus. *57:* 230.

MURINA AURATA FEAE Thomas, 1891

1891. *Harpiocephalus feae* Thomas, Ann. Mus. Stor. Nat. Genova, *10:* 884; 926–927 (1892). Biapo, Karen Hills, Burma.

MURINA AURATA USSURIENSIS Ognev, 1913

1913. *Murina ussuriensis* Ognev, Annu. Mus. Zool. Acad. St. Pétersb. *18:* 402. Evseevka, Imansky district, Ussuri and Odarka, Chanka Lake, Ussuri district, South-Eastern Siberia. Widely distributed in Japan.

Murina leucogaster Milne-Edwards, 1872 Great Tube-nosed Bat

Approximate distribution of species: Siberia, known from Upper Yenesei, Kuznetzk Ala-Tau, Lake Teletzkoie in Altai, Ussuri region, Sakhalin; Japan, China (states of Szechuan and Fukien); Manchuria; near Darjeeling, North-Eastern India.

MURINA LEUCOGASTER LEUCOGASTER Milne-Edwards, 1872

1872. *Murina leucogaster* Milne-Edwards, Rech. H. N. Mamm. 252, pl. 37b, fig. 1 (2 in error); pl. 37c, fig. 3. Moupin district, Szechuan, China.
1899. *Murina leucogastra* Thomas, P.Z.S. *1898:* 771.
Ranges to Fukien, China.

MURINA LEUCOGASTER HILGENDORFI Peters, 1880

1880. *Harpyocephalus hilgendorfi* Peters, Mber. Preuss. Akad. Wiss. 24. Near Tokyo, Yeddo (= Hondo), Japan.

MURINA LEUCOGASTER SIBIRICA Kastschenko, 1905

1905. *Harpiocephalus leucogaster sibiricus* Kastschenko, Observ. Mamm. W. Siberia & Turkestan, 102b. Tomsk region, Siberia. (Kuzyakin, in Bobrinskii (1944), ignores this name and uses *hilgendorfi* for the Siberian representative of this species.)

MURINA LEUCOGASTER OGNEVI Bianchi, 1916

1916. *Murina ognevi* Bianchi, Annu. Mus. Zool. Acad. St. Pétersb. *21:* lxxviii. Vladivostock, Eastern Siberia. Remarks as for last race.

MURINA LEUCOGASTER RUBEX Thomas, 1916

1916. *Murina rubex* Thomas, J. Bombay N.H. Soc. *24:* 639. Pashok, near Darjeeling, North-Eastern India.

MURINA LEUCOGASTER FUSCA Sowerby, 1922

1922. *Murina huttonii fuscus* Sowerby, J. Mamm. *3:* 46. Northern Kirin, Manchuria.

MURINA LEUCOGASTER INTERMEDIA Mori, 1933

1933. *Murina hilgendorfi intermedia* Mori, J. Chosen N.H. Soc. *16:* 2, 5. Mt. Kongo, Korea.

Murina huttoni Peters, 1872

Approximate distribution of species: Kashmir, Kumaon, Sikkim district, Western Burma, Fukien (China), Tonkin and Laos (Indo-China).

MURINA HUTTONI HUTTONI Peters, 1872

1872. *Harpyiocephalus huttoni* Peters, Mber. Preuss. Akad. Wiss. 257. P.Z.S. 711. Dehra Dun, Kumaon, North-Western India. Also recorded from Darjeeling.

MURINA (?) HUTTONI TUBINARIS Scully, 1881

1881. *Harpiocephalus tubinaris* Scully, P.Z.S. 200. Gilgit, Kashmir. Has also been recorded from Tonkin and Laos by Osgood, and from Darjeeling and Chin Hills. Tate states (1941, 577) "*huttoni* (= *tubinaris?*)".

MURINA HUTTONI RUBELLA Thomas, 1914

1914. *Murina huttoni rubella* Thomas, Ann. Mag. N.H. *13:* 440. Kuatun, Fukien, South-Eastern China.

Murina cyclotis Dobson, 1872

Approximate distribution of species: Hainan; Sikkim, Western and Northern Burma; Tonkin and Laos, Indo-China; Ceylon. Recorded also from the Philippine Islands.

MURINA CYCLOTIS CYCLOTIS Dobson, 1872

1872. *Murina cyclotis* Dobson, Proc. Asiat. Soc. Bengal, 210. Darjeeling, North-Eastern India (Tate). Range includes Burma, Indo-China, Hainan.

MURINA CYCLOTIS EILEENAE Phillips, 1932

1932. *Murina eileenae* Phillips, Ceylon J. Sci., B, *16*, 3: 329. Mousakande, Gammaduwa, 3,000 ft., Ceylon.

Incertae sedis

Murina puta Kishida, 1924, Zool. Mag. Tokyo, *36:* 30–49, 127–139. Formosa. (N.V.)

Subgenus *HARPIOLA* Thomas, 1915

Murina grisea Peters, 1872 Peters' Tube-nosed Bat

Approximate distribution of species: Kumaon, North-Western India.

MURINA GRISEA Peters, 1872

1872. *Murina grisea* Peters, Mber. Preuss. Akad. Wiss. 258. P.Z.S. 712. Jeripanee, Mussoori, 5,500 ft., Kumaon, North-Western Himalayas.

Genus **HARPIOCEPHALUS** Gray, 1842

1842. *Harpiocephalus* Gray, Ann. Mag. N.H. *10:* 259. *Harpiocephalus rufus* Gray = *Vespertilio harpia* Temminck.
1866. *Harpyiocephalus* Gray, Ann. Mag. N.H. *17:* 90.

For characters of this genus compared with *Murina*, see Miller, 1907, *Families and Genera of Bats*, 229.

1 species: *Harpiocephalus harpia*, page 187

Harpiocephalus harpia Temminck, 1840 — Hairy-winged Bat

Approximate distribution of species: Formosa; Darjeeling, Bhutan Duars, Palni Hills, in Southern India, Northern Burma; Indo-China; Sumatra, Java; Amboina (Moluccas).

Harpiocephalus harpia harpia Temminck, 1840

1840. *Vespertilio harpia* Temminck, Mon. Mamm. *2:* 219, pl. 55. Mt. Gede, Java.
1842. *Harpiocephalus rufus* Gray, Ann. Mag. N.H. *10:* 259. New name for *harpia*.
(?) 1858. *Vespertilio pearsonii* Tomes, P.Z.S. 87. Locality unknown. Recorded from Formosa (Kuroda).

Harpiocephalus harpia lasyurus Hodgson, 1847

1847. *Noctulinia lasyura* Hodgson, J. Asiat. Soc. Bengal, *16:* 896. "Central Hills, sub-Himalayas." Darjeeling, according to Wroughton. Also occurs in Bhutan Duars.

Harpiocephalus harpia rufulus G. Allen, 1913

1913. *Harpiocephalus rufulus* G. Allen, Proc. Biol. Soc. Washington, *26:* 214. Lao-Kai, Tonkin, Indo-China.

Harpiocephalus harpia madrassius Thomas, 1923

1923. *Harpiocephalus harpia madrassius* Thomas, J. Bombay N.H. Soc. *29:* 88. Perumal, Palni Hills, Southern India.

Harpiocephalus (?) harpia mordax Thomas, 1923

1923. *Harpiocephalus mordax* Thomas, J. Bombay N.H. Soc. *29:* 88. Mogok, Upper Burma.

Subfamily Kerivoulinae

Genus **KERIVOULA** Gray, 1842

1842. *Kerivoula* Gray, Ann. Mag. N.H. *10:* 258. *Vespertilio pictus* Pallas (Peters, 1866).
1849. *Kirivoula* Gervais, Dict. Univ. H.N. *13:* 213.
1891. *Cerivoula* Blanford, Fauna Brit. Ind. Mamm. 338.
1905. *Phoniscus* Miller, Proc. Biol. Soc. Washington, *18:* 229. *Phoniscus atrox* Miller. Valid as a subgenus. For status see Simpson (1945, 60) and Tate (1941, 586).

The Oriental members of the genus were reviewed by Tate (1941, 584). Dobson (1878, 331) also gave a key to the African and Asiatic species then known.

3 species in the area covered by this list:

Kerivoula hardwickei, page 188
Kerivoula papillosa, page 189
Kerivoula picta, page 188

Kerivoula picta Pallas, 1767 Painted Bat

Approximate distribution of species: Kwantung, in Southern China, Hainan; Ceylon and Southern India (Western Ghats, Dharwar). (Blanford gave several other Indian localities, including Sikkim, Bengal and Burma.) Malay States, Sumatra, Java, Bali, Borneo.

KERIVOULA PICTA PICTA Pallas, 1767

1767. *Vespertilio pictus* Pallas, Spic. Zool. *3:* 7. Most authors cite Peninsular India as the type locality. Tate, however, thinks it came from Ternate, Moluccas (near Halmahera).

1832. *Vespertilio kirivoula* Cuvier, Nouv. Arch. Mus. H.N. Paris, *1:* 9.

Range includes Malay States, eastwards to Bali and Borneo; also Ceylon and Southern India.

KERIVOULA PICTA BELLISSIMA Thomas, 1906

1906. *Kerivoula picta bellissima* Thomas, Ann. Mag. N.H. *17:* 423. Pakhoi, Southern Kwantung, Southern China. Range includes Hainan.

Kerivoula hardwickei Horsfield, 1824 Hardwicke's Bat

Approximate distribution of species: Szechuan, Kwangsi and Fukien in Southern China; Darjeeling, Mysore in Southern India, Ceylon, Burma, (Blanford also quoted Assam and the Punjab); ? Indo China; Malay States, Mentawei Islands west of Sumatra, Java, Bali, Borneo, Celebes and probably represented in the Philippine Islands.

KERIVOULA HARDWICKEI HARDWICKEI Horsfield, 1824

1824. *Vespertilio hardwickii* Horsfield, Zool. Res. Java, (8). Java.

1871. *Kerivoula fusca* Dobson, Proc. Asiat. Soc. Bengal, 215. No locality.

Range: apparently includes Darjeeling, as well as Malay States, Borneo, Java, Bali, Celebes.

KERIVOULA HARDWICKEI DEPRESSA Miller, 1906

1906. *Kerivoula depressa* Miller, Proc. Biol. Soc. Washington, *19:* 64. Biapo, Karin Hills, Southern Burma. Range includes Szechuan and Fukien, China.

KERIVOULA HARDWICKEI CRYPTA Wroughton & Ryley, 1913

1913. *Kerivoula crypta* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 14. Shimoga, Mysore, Southern India. Range includes Upper Burma (Kaulback Coll., B.M.).

KERIVOULA HARDWICKEI MALPASI Phillips, 1932

1932. *Kerivoula malpasi* Phillips, Ceylon J. Sci., B, *16:* 331. Kumbalgamuwa, 3,000 ft., Mulhalkelle district, Central Province, Ceylon.

Kerivoula papillosa Temminck, 1840

Approximate distribution of species: Calcutta, India; Indo-China; Malay States, Sumatra, Java, Borneo.

(KERIVOULA PAPILLOSA PAPILLOSA Temminck, 1840. Extralimital)

1840. *Vespertilio papillosa* Temminck, Mon. Mamm. *2:* 220. Bantam, Java.

KERIVOULA PAPILLOSA LENIS Thomas, 1916

1916. *Kerivoula lenis* Thomas, J. Bombay N.H. Soc. *24*: 416. Calcutta, Bengal, India.

KERIVOULA PAPILLOSA MALAYANA Chasen, 1940

1940. *Kerivoula papillosa malayana* Chasen, Bull. Raffles Mus. *15:* 55. Gintang Bidei, Selangor-Pahang boundary, 2,300 ft., Malay States. Recorded from Tonkin, Indo-China (Tate, 1947).

ORDER PRIMATES

(Not including Family Hominidae)

FAMILIES: Cercopithecidae, page 192
Lorisidae, page 190
Pongidae, page 211

Simpson, 1945, also refers the family Tupaiidae to the Primates, and discusses this classification at length (pp. 176, 182, 183). It is by no means conclusively proved, however, that this classification is the correct one, and for the present we prefer to regard them as belonging to the order Insectivora. It appears to us that of the Primates the more specialized members, the Anthropoidea, are easily defined and distinguished from the lower orders of Mammalia, such as the Insectivora, but that the more generalized members, the Prosimii of Simpson (perhaps excepting the Tarsiidae) are not so easily separable from the lower orders. We would particularly draw attention to Simpson's amusing explanation (pp. 180, 181) of the confusion which exists in this order, particularly as regards nomenclature.

Special works of reference include Elliot, 1913, a Review of the Primates, *Monogr. Amer. Mus. N.H.*, 3 volumes, in which there is wholesale splitting, but which remains the best single source of information on living Primates; and Pocock, 1939, *Fauna British India, Mammalia, 1:* 13, which gives a classification of the Indian Primates and clears up a great deal of former nomenclatural difficulty. The Malaysian forms are listed, in apparently good order, by Chasen (1940). Pocock, 1934, *P.Z.S.* 895, reviewed the Langurs, and 1927, *P.Z.S.* 719, the Gibbons. He also published several short papers on Macaques.

Apart from the Hominidae and, as explained above, the Tupaiidae, Simpson (1945) classified the Indian and Palaearctic recent Primates as follows:

Suborder: PROSIMII
Infraorder: LORISIFORMES
Family: Lorisidae

Suborder: ANTHROPOIDEA
Superfamily: Cercopithecoidea
Family: Cercopithecidae (with subfamilies Cercopithecinae and Colobinae)

Superfamily: Hominoidea (in part)
Family: Pongidae (subfamilies Hylobatinae and Ponginae (extralimital))

SUBORDER PROSIMII

FAMILY LORISIDAE

Genera: *Loris*, page 190
Nycticebus, page 191

For generic characters, see Pocock, 1939, *Fauna British India, Mamm. 1:* 165.

Genus **LORIS** E. Geoffroy, 1796

1785. *Tardigradus* Boddaert, Elench. Anim. 43, 67. *Tardigradus loris* Boddaert = *Lemur tardigradus* Linnaeus. Not of Brisson, 1762.
1796. *Loris* E. Geoffroy, Mag. Encycl. *1:* 48. *Loris gracilis* Geoffroy = *Lemur tardigradus* Linnaeus.
1811. *Stenops* Illiger, Prodr. Syst. Mamm. et. Avium, 73. *Lemur tardigradus* Linnaeus.

1 species: *Loris tardigradus*, page 190

Loris tardigradus Linnaeus, 1758 Slender Loris

Approximate distribution of species: Ceylon and Southern India (Eastern Ghats, Mysore, Malabar, Travancore, Coorg).

LORIS TARDIGRADUS TARDIGRADUS Linnaeus, 1758

1758. *Lemur tardigradus* Linnaeus, Syst. Nat. 10th ed. *1:* 29. Ceylon.
1796. *Loris gracilis* E. Geoffroy, Mag. Encycl. *1:* 48. Ceylon.
1804. *Loris ceylonicus* Fischer, Anat. Maki, *1:* 28. Ceylon.
1904. *Loris gracilis zeylanicus* Lydekker, P.Z.S. *2:* 346. Peradeniya, Ceylon. (See Pocock, 1939, 181.)

Range: low-country wet zone of Ceylon.

Loris tardigradus lydekkerianus Cabrera, 1908

1908. *Loris lydekkerianus* Cabrera, Bol. Soc. Esp. H.N. Madrid, 139. Madras, India. Range: Eastern Ghats, westwards to Mangalore and Mysore, India.

Loris tardigradus malabaricus Wroughton, 1917

1917. *Loris malabaricus* Wroughton, J. Bombay N.H. Soc. *25:* 45. Huvinakadu Estate, Kutta, South Coorg, 2,843 ft., India. Range: Malabar district, Wynaad, South Coorg, Travancore.

Loris tardigradus grandis Hill & Phillips, 1932

1932. *Loris tardigradus grandis* Hill & Phillips, Ceyl. J. Sci. (B), *17:* 111. Mousekanda, Gammaduwa, 2,200 ft., Central Province, Ceylon. Range: "Probably throughout the lower foothills of the mountain cluster of the Central and Uva Provinces," up to 3,500 ft. approximately.

Loris tardigradus nordicus Hill, 1933

1933. *Loris tardigradus nordicus* Hill, Ceyl. J. Sci. (B), *18:* 113, 120. Talawa, 50 ft., North Central Province, Ceylon. Range: the dry zone of the North Province, North Central Province and Central Province of Ceylon, from just above sea level up to 650 ft.

Loris tardigradus nycticeboides Hill, 1942

1942. *Loris tardigradus nycticeboides* Hill, J. Bombay N.H. Soc. *43:* 73. Horton Plains, 6,000 ft., Ceylon.

Genus **NYCTICEBUS** E. Geoffroy, 1812

1812. *Nycticebus* E. Geoffroy, Ann. Mus. H.N. Paris, *19:* 163. *Nycticebus bengalensis* Geoffroy.

2 species: *Nycticebus coucang*, page 191
Nycticebus pygmaeus, page 192

Pocock (1939) thought that there was only one species in this genus, but Osgood (1932) lists two forms from Indo-China, and as there is an apparent geographical overlap between them and they occur together, *pygmaeus* is here regarded as a valid, smaller species.

Nycticebus coucang Boddaert, 1785 Slow Loris

Approximate distribution of species: Assam, Chittagong, Burma, Tenasserim, Siam, Indo-China, Malay States, Sumatra, Java, Borneo, and some adjacent small islands to Philippine Islands. Possibly into Yunnan.

Nycticebus coucang coucang Boddaert, 1785

1785. *Tardigradus coucang* Boddaert, Elench. Anim. 67. Locality unknown (probably Malacca (Chasen)). Range: Mergui Archipelago (King Island quoted by Pocock), Malay States, Sumatra.

Nycticebus coucang bengalensis Lacépède, 1800

1800. *Lori bengalensis* Lacépède, Séances des Écoles normales, Tome 8: 68. Bengal.
1804. *Loris bengalensis* Fischer, Anat. Maki, *1:* 30. Bengal.
1867. *Nycticebus cinereus* Milne-Edwards, Nouv. Arch. Mus. Bull. *3:* 9. Bangkok, Siam. Although G. Allen and Osgood listed this as a valid race, Pocock says it cannot be distinguished from the earlier-named *bengalensis*.
(?) 1904. *Nycticebus tardigradus typicus* Lydekker, P.Z.S. *2:* 345.
1921. *Nycticebus incanus* Thomas, Ann. Mag. N.H. *8:* 627. Kyeikpadeih, Pegu, Burma.

Range: Assam, Chittagong, Burma (? into Yunnan), Indo-China, Siam.

Nycticebus coucang tenasserimensis Elliot, 1913

1913. *Nycticebus tenasserimensis* Elliot, Rev. Primates, *1:* 25. Amherst, Northern Tenasserim. Range: Tenasserim and South-Western Siam.

Nycticebus pygmaeus Bonhote, 1907 Lesser Slow Loris

Approximate distribution of species: Indo-China.

Nycticebus pygmaeus Bonhote, 1907

1907. *Nycticebus pygmaeus* Bonhote, Abstr. P.Z.S. No. 38, 2. P.Z.S. 4. Nhatrang, Annam, Indo-China. Osgood (1932) quoted this form from Annam, Laos, Cochin-China and Tonkin, apparently occurring with *N. coucang bengalensis* ("*cinereus*") which was quoted from Laos and Annam.

Suborder Anthropoidea

FAMILY CERCOPITHECIDAE

Genera: *Macaca*, page 193
Papio, page 200
Presbytis, page 203
Pygathrix, page 202
Rhinopithecus, page 201

This family is divided into two subfamilies: the Colobinae, which contains the Langurs and Leaf-eating Monkeys, *Presbytis*, *Pygathrix*, *Rhinopithecus*; and the Cercopithecinae, to which *Papio* and *Macaca* belong. Some authors give the two divisions family rank.

It is interesting to note that Winge, 1924, *Pattedyr Slaegter*, *2:* 277, recognized only five genera in the whole family, which he divided in a different way from that usually agreed on: namely, he contrasted a group Cercopithecini, with weaker cheekteeth, shorter face, containing the African *Cercopithecus* plus the Langurs and Leaf-eating Monkeys *Semnopithecus* (= the Asiatic genera currently recognized) and the African *Colobus* with a group "Cynocephali" with cheekteeth stronger, face longer, containing *Macaca* and "*Cynocephalus*" = *Papio*.

Subfamily Cercopithecinae

Genus **MACACA** Lacepède, 1799

1758. *Simia* Linnaeus, Syst. Nat. 10th ed. *1:* 25. *Simia sylvanus* Linnaeus. (By suspension of the Rules the name *Simia* is suppressed, see Opinion 114 of Internat. Comm. on Zool. Nomenclature.)

1799. *Macaca* Lacepède, Tabl. Mamm. 4. *Simia inuus* Linnaeus = *Simia sylvanus* Linnaeus.

1812. *Inuus* E. Geoffroy, Ann. Mus. H.N. Paris, *19:* 100. *Inuus ecaudatus* Geoffroy = *Simia sylvanus* Linnaeus.

1816. *Sylvanus* Oken, Lehrb. Naturgesch. *3,* 2: 1223. *Inuus ecaudatus* Geoffroy = *Simia sylvanus* Linnaeus.

1820. *Silenus* Goldfuss, Handbuch Zool. *2:* 479. *Cynocephalus silenus* Schreber = *Simia silenus* Linnaeus.

1824. *Magotus* Ritgen, Nat. Eintheilung Säugeth. 33. "Les Magots" of Cuvier.

1827. *Magus* Lesson, Man. Mamm. 43. *Magus sylvanus* and *M. maurus.*

1828. *Pithes* Burnett, Quart. J. Sci. Lit. & Art. *26,* 2: 307. *Pithes sylvanus* = *Simia sylvanus* Linnaeus.

1839. *Maimon* Wagner, Schreb. Säugeth. Suppl. *1:* iv *bis* and 141. *Inuus silenus* = *Simia silenus* Linnaeus.

1840. *Rhesus* Lesson, Rev. Zool. 2: 70, *nom. nud.* 1840, Spec. Mamm. 95. *Cercopithecus mulatta* Zimmermann.

1841. *Salmacis* Gloger, Gemeinn. Naturges. *1:* 35. New name for *Macaca.*

1848. *Lyssodes* Gistel, Naturgesch. Thier. f. höhere Schulen, 9. *Macaca speciosus* F. Cuvier.

1862. *Vetulus* Reichenbach, Vollständ. Nat. Affen, 125. New name for *Silenus* Lesson.

1862. *Cynamolgus* Reichenbach, Vollständ. Nat. Affen, 130. *Macacus irus* Cuvier (*fide* Pocock).

1862. *Zati* Reichenbach, Vollständ. Nat. Affen, 130. *Macaca radiata* Geoffroy (*fide* Pocock).

1862. *Nemestrinus* Reichenbach, Vollständ. Nat. Affen, 139. *Macaca nemestrina* Linnaeus. Not of Latreille, 1802.

1913. *Pithecus* Elliot, Rev. Primates, *2:* 176. Not of Cuvier & Geoffroy, 1795.

Macacus of many earlier authors, including Blanford, 1888, Fauna Brit. India, *1:* 11.

11 species in the area covered by this list:

Macaca assamensis, page 198
Macaca cyclopis, page 198
Macaca fuscata, page 199
Macaca irus, page 196
Macaca mulatta, page 197
Macaca nemestrina, page 195
Macaca radiata, page 195
Macaca silenus, page 195
Macaca sinica, page 194
Macaca speciosa, page 199
Macaca sylvana, page 200

The type is the North-West African species *M. sylvana*. Various subgeneric names are available for some of the other species; Pocock, 1939, *Fauna British India, Mammalia, 1*, gives a key to eight of the above species which occur in India, and lists the subgeneric groups. As far as distribution is concerned, three of the species, *M. sinica*, *M. radiata*, *M. silenus*, are confined to Peninsular India and/or to Ceylon; two, *M. nemestrina* and *M. irus*, occur together from Burma south-eastwards through the Malaysian region covered by Chasen (1940); the species *M. mulatta*, *M. speciosa* and *M. assamensis* are roughly Himalayan—Indo-China—Chinese in range; and the other two species, *M. fuscata* and *M. cyclopis*, are from Japan and Formosa respectively. The genotype, a tailless species, lacks the "cap" of hairs on the head which is usually present in the species inhabiting India, *mulatta* and *irus* excepted. Pocock (p. 33) states that the "cap" is also absent in *fuscata*, which is a species with a short, hairy tail and appears to be nearly allied to *speciosa* (although Pocock definitely states (p. 70) that *speciosa* differs from *fuscata* in the structure of the glans penis); and in *cyclopis*, which probably belongs to the *mulatta* group, as it seems very like *M. assamensis*. But its tail is about 68 per cent. of the head and body length, according to measurements given by Elliot, which is longer than is normal in *assamensis*, and the tail is black and very well haired, which character seems to distinguish from *assamensis* in the material examined.

Macaca sinica group

The name *Zati* Reichenbach, 1862, is available for these species if subgeneric division is required. Long-tailed species, differing from their allies, according to Pocock, in the structure of the male genitalia.

Macaca sinica Linnaeus, 1771 Toque Monkey

Approximate distribution of species: Ceylon.

Macaca sinica sinica Linnaeus, 1771

1771. *Simia sinica* Linnaeus, Mant. Plant. 521. Locality unknown.
1862. *Cynamolgus (Zati) audeberti* Reichenbach, Vollständ. Nat. Affen, 132.
1863. *Macaca pileatus* Blyth, Cat. Mamm. Mus. Asiat. Soc. 9. Not of Kerr, 1792.
1931. *Macaca sinica inaurea* Pocock, J. Bombay N.H. Soc. *35:* 286. Cheddikulam, North Province, Ceylon.

Range: low-country dry zone, from extreme north to extreme south of Ceylon.

Macaca sinica aurifrons Pocock, 1931

1931. *Macaca sinica aurifrons* Pocock, J. Bombay N.H. Soc. *35:* 286. Rayigam Korale, Western Province, Ceylon. Range: low-country wet zone and central hill zone of Ceylon.

Macaca sinica opisthomelas Hill, 1942

1942. *Macaca (Zati) sinica opisthomelas* Hill, J. Bombay N.H. Soc. *43:* 402. Horton Plains, Highlands of Ceylon.

Macaca radiata Geoffroy, 1812 Bonnet Monkey

Approximate distribution of species: Peninsular India, north to Satara and the Godaveri River. Closely allied to and perhaps representing *sinica* on the mainland. For characters see Pocock (1939, 33, 38).

MACACA RADIATA RADIATA Geoffroy, 1812

1812. *Cercocebus radiatus* E. Geoffroy, Ann. Mus. H.N. Paris, *19:* 98. Locality unknown. Range: Satara, Kanara, Mysore, Coorg, Nilgiri and Palni Hills, Cochin, Eastern Ghats, etc., in Peninsular India.

MACACA RADIATA DILUTA Pocock, 1931

1931. *Macaca radiata diluta* Pocock, J. Bombay N.H. Soc. *35:* 278. Boothapundy, on the Ghats, north of Aramboly in Travancore, Southern India.

Macaca silenus group

The name *Silenus* Goldfuss, 1820, is available for this species, which is well figured in Pocock, 1939, pl. 4, opposite p. 66, and is not likely to be confused with any other species. Tail length moderate.

Macaca silenus Linnaeus, 1758 Lion-tailed Macaque

Approximate distribution of species: Peninsular India; the Western Ghats, principally of Travancore and Cochin.

MACACA SILENUS Linnaeus, 1758

1758. *Simia silenus* Linnaeus, Syst. Nat. 10th ed. *1:* 26. "Ceylon."
1777. *Cercopithecus veter* Erxleben, Syst. Regn. An. 24. Not of Linnaeus, 1766.
1792. *Simia (Cercopithecus) veter albibarbatus* Kerr, Anim. Kingd. 64.
1792. *Simia (Cercopithecus) silenus albibarbatus* Kerr, *loc. cit.*
1793. *Simia ferox* Shaw, Mus. Leverian, 69.
Range: as above.

Macaca nemestrina group

Pocock would refer this to the subgenus *Silenus* if subgeneric division is required. It lacks the ruff of long greyish hair extending each side of face from temples to throat, which is a diagnostic character of *M. silenus*. Tail length medium.

Macaca nemestrina Linnaeus, 1766 Pig-tailed Macaque

Approximate distribution of species: Assam, Burma, Siam, Malay States, Sumatra, Borneo, and a few small adjacent islands.

(MACACA NEMESTRINA NEMESTRINA Linnaeus, 1766. Extralimital)

1766. *Simia nemestrina* Linnaeus, Syst. Nat. 12th ed. *1:* 35. Sumatra. (Ranges north on the mainland about to Trang, Lower Siam.)

MACACA NEMESTRINA LEONINA Blyth, 1863

1863. *Macacus leoninus* Blyth, Cat. Mamm. Mus. As. Soc. 7. Northern Arakan, Burma.
1869. *Macacus andamanensis* Bartlett, Land and Water, *8:* 57. Port Blair, Andaman Islands (introduced).
1906. *Macaca adusta* Miller, Proc. U.S. Nat. Mus. *29:* 559. Champang, Tenasserim.
1906. *Macaca insulana* Miller, Proc. U.S. Nat. Mus. *29:* 560. Chance Island, Mergui Archipelago.
1919. *Macaca nemestrina indochinensis* Kloss, J.N.H. Soc. Siam, *3:* 343. Lat Bua Kao, Eastern Siam.

Range: Upper Burma to Tenasserim, Mergui Archipelago and Siam.

MACACA NEMESTRINA BLYTHII Pocock, 1931

1931. *Macaca nemestrina blythii* Pocock, J. Bombay N.H. Soc. *35:* 305. Locality unknown. Described from a single captive specimen. Pocock says the distribution is unknown, "but probably some district of British India east of the Ganges; ? Naga Hills, in Assam".

Macaca irus group

The subgeneric name *Cynamolgus* Reichenbach, 1862, is available. Long-tailed species, differing from the *sinica* group in having the hair on the crown short. The differences between the two types are well figured in Pocock (1939, 35, 39, and pl. 5, opposite p. 79).

Macaca irus Cuvier, 1818 Crab-eating Macaque

Approximate distribution of species: Burma, Nicobar Islands, Indo-China, Siam, Malay States, Sumatra, Java, Borneo, and many small adjacent islands, east to Philippines.

(MACACA IRUS IRUS Cuvier, 1818. Extralimital)

1775. *Simia cynamolgus* Schreber, Säugeth. *1:* 91. Not of Linnaeus, 1758.
1818. *Macacus irus* F. Cuvier, Mém. Mus. H.N. Paris, *4:* 120. Sumatra (according to Chasen, 1940). Substitute for *cynamolgus* Schreber.

MACACA IRUS AUREA Geoffroy, 1831

1831. *Macacus aureus* Geoffroy, Zool. Voy. de Bélanger, 58, 76. Pegu, Burma.
1910. *Pithecus vitiis* Elliot, Proc. U.S. Nat. Mus. *38:* 346. Domel Island, Mergui Archipelago.
1915. *Pithecus fascicularis* Wroughton, J. Bombay N.H. Soc. *23:* 700. Not of Raffles, 1821.

Range: Lower Burma, Tenasserim, Mergui Archipelago, South-Western Siam.

MACACA IRUS UMBROSA Miller, 1902

1902. *Macacus umbrosus* Miller, Proc. U.S. Nat. Mus. *24:* 789. Little Nicobar Island, Bay of Bengal. Range: Great Nicobar, Little Nicobar and Katchal Island, Nicobar Islands.

MACACA IRUS VALIDA Elliot, 1909

1909. *Pithecus validus* Elliot, Ann. Mag. N.H. *4:* 252. Cochin-China. (Type skin in B.M. bearing label "*Macaca irus valida*. The tail is imperfect, not complete as Elliot supposed.")

MACACA IRUS ATRICEPS Kloss, 1919

1919. *Macaca irus atriceps* Kloss, J.N.H. Soc. Siam, *3:* 347. Koh Kram Island, near Cape Liant, South-Eastern Siam.

Macaca mulatta group

Rhesus Lesson, 1840, is available if subgeneric division is required. Contains two closely allied species (*mulatta* and *assamensis*) which occur together, for characters see Pocock (1939, 33), and the Formosan *M. cyclopis* seems to belong here. Tail of medium length and hairier than *nemestrina*; usually with no definite "cap" on crown.

Macaca mulatta Zimmermann, 1780 Rhesus Macaque

Approximate distribution of species: Kafiristan (Eastern Afghanistan), Kashmir, Punjab, east to Nepal, Assam and Burma, south approximately to the Tapti River (Khandesh) and the Godavari in Northern Peninsular India; Siam, Indo-China; Szechuan and Yunnan, eastwards to Fukien and adjacent states in Southern China, Hainan, Tibet, and the neighbourhood of Pekin, where perhaps introduced.

MACACA MULATTA MULATTA Zimmermann, 1780

1780. *Cercopithecus mulatta* Zimmermann, Geogr. Gesch. Mensch. *2:* 195. "India."
1792. *Simia (Cercopithecus) fulvus* Kerr, Anim. Kingd. 73. "India."
1798. *Simia rhesus* Audebert, Hist. Nat. Singes, sig. i. Locality unknown.
1800. *Simia erythraea* Shaw, Gen. Zool. *1:* 33. Locality unknown.
1840. *Macaca (Pithex) oinops* Hodgson, J. Asiat. Soc. Bengal, *9:* 1212. Nepal Terai.
1840. *Macaca (Pithex) nipalensis* Hodgson, J. Asiat. Soc. Bengal, *9:* 1212. Nepal Terai.
1866. *Inuus sancti-johannis* Swinhoe, P.Z.S. 556. North Lena Island, Hong Kong, China. For status, see G. Allen, 1938, Mamm. China & Mongolia, *1:* 284.
1868. *Macacus lasiotus* Gray, P.Z.S. 60, pl. 6. Szechuan, China. For status, see G. Allen, 1938, *1:* 284.
1872. *Macacus tcheliensis* Milne-Edwards, Rech. Mamm. 227, pls. 32, 33. Mountains to the east of the Province of Tcheli (Chihli), North-Eastern China. For status, see G. Allen, 1938, *1:* 284.
1909. *Pithecus littoralis* Elliot, Ann. Mag. N.H. *4:* 250. Kuatun, Fukien, South-Eastern China.
1909. *Pithecus brachyurus* Elliot, Ann. Mag. N.H. *4:* 251. Hainan. Not of H. Smith, 1842.
1913. *Pithecus brevicaudus* Elliot, Rev. Primates, *2:* 216, pl. 23. New name for *brachyurus*, preoccupied.
1917. *Macaca siamica* Kloss J.N.H. Soc. Siam, *2:* 247. Meping Rapids, below Chiengmai, Siam. For status, see Pocock, 1939, Fauna Brit. India, Mamm. *1:* 45.

Range: Nepal, Bhutan, North Kamrup, Assam, Burma, Northern Peninsular India, Siam, Indo-China, Szechuan, Yunnan, to Fukien and adjacent states in Southern China, Chihli, Hainan.

MACACA MULATTA VESTITA Milne-Edwards, 1892

1892. *Macacus vestitus* Milne-Edwards, Rev. Gén. Sciences, 671. Tengri-nor, Tibet. G. Allen thinks this may be a synonym of the typical race.

MACACA MULATTA VILLOSA True, 1894

1894. *Macacus rhesus villosus* True, Proc. U.S. Nat. Mus. *17:* 2. Lolab, northern end of Wular Lake, about 40 miles north-west of Srinagar, Kashmir. Range: Southern Kashmir, Upper Punjab, Kumaon, in Northern India.

MACACA MULATTA MCMAHONI Pocock, 1932

1932. *Macaca mulatta mcmahoni* Pocock, J. Bombay N.H. Soc. *35:* 544. Kootai, in Lower Chitral, between the Bashgal Valley in Kafiristan and the Chitral Valley, 3,600 ft. Range: Kafiristan and Chitral.

Macaca assamensis M'Clelland, 1839 — Assamese Macaque

Approximate distribution of species: Nepal, Sikkim, Bhutan, Assam, Northern Burma, south to the Sundarbans; Yunnan; Indo-China.

MACACA ASSAMENSIS ASSAMENSIS M'Clelland 1839

1839. *Macacus assamensis* M'Clelland, in Horsfield, P.Z.S. 148. Assam.
1932. *Macaca assamensis coolidgei* Osgood, Field Mus. N.H. Zool. *18:* 209. Hoi Xuan, Annam, Indo-China.

Range: Assam, Mishmi and Naga Hills, Northern Burma, Tonkin and Annam.

MACACA ASSAMENSIS PELOPS Hodgson, 1840

1840. *Macacus (Pithex) pelops* Hodgson, J. Asiat. Soc. Bengal, *9:* 1213. Nepal Kachar.
1870. *Macacus problematicus* Gray, Cat. Monkeys, etc. B.M. 128. Dhalimkot, Bhutan.
1872. *Macacus rheso-similis* Sclater, P.Z.S. 495, pl. 25. "East Indies."

Range: Himalayas, from Mussoorie through Nepal and Sikkim, from 2,000 to about 6,000 ft., to Bhutan.

Macaca cyclopis Swinhoe, 1862 — Formosan Macaque

Approximate distribution of species: Formosa.

MACACA CYCLOPIS Swinhoe, 1862

1862. *Macacus cyclopis* Swinhoe, P.Z.S. 350. Formosa.
1863. *Macacus (radiatus) affinis* Blyth, Cat. Mamm. Mus. As. Soc. 8. Formosa.

Macaca speciosa group

Lyssodes Gistel, 1848, is available for *speciosa*, a short-tailed monkey which differs from the other species in the abnormal external male genitalia (Pocock.) The Japanese *M. fuscata* resembles *speciosa* in its short tail, and in most other characters, but according to Pocock (1939, 70) differs from that species in the structure of the glans penis.

Macaca speciosa F. Cuvier, 1825 Stump-tailed Macaque

Approximate distribution of species: Szechuan and Yunnan, eastwards to Fukien and adjacent states in Southern China; Assam, Burma, Indo-China, south to Siamese Malaya.

Macaca speciosa speciosa F. Cuvier, 1825

1825. *Macacus speciosus* Cuvier, H.N. Mamm. *3*, 47, Macaque à face rouge, 2. "East Indies."

1871. *Macacus brunneus* Anderson, P.Z.S. 628. Kakhyen Hills, east of Bhamo, Yunnan-Burma border. *M. brunneus*=*M. s. thibetanus*, according to G. Allen.

1912. *Macacus* (*Magus*) *arctoides melli* Matschie, S.B. Ges. Nat. Fr. Berlin, 308. West of Lochangho, Kwantung, Southern China. G. Allen uses this name for the South-Eastern Chinese form, but it is not distinguishable from *brunneus*, according to Pocock.

1912. *Macacus* (*Magus*) *arctoides esau* Matschie, *loc. cit.* 309. West of Lochangho, Kwantung, Southern China.

1928. *Pithecus pullus* Howell, Proc. Biol. Soc. Washington, *41:* 41. Near Kuatun, Fukien, Southern China.

Range: Assam, Upper Burma, Southern China, Tonkin and Annam.

Macaca speciosa arctoides Geoffroy, 1831

1831. *Macacus arctoides* I. Geoffroy, Zool. Voy. de Bélanger, 61. Cochin-China.

1854. *Macacus ursinus* Gervais, H.N. Mamm. *1:* 93. Substitute for *arctoides*. Provisionally regarded as a valid race by Pocock.

Macaca speciosa melanota Ogilby, 1839

1839. *Papio melanotus* Ogilby, P.Z.S. 31. Type locality "said to be Madras".

1872. *Macacus rufescens* Anderson, P.Z.S. 204. Singapore (where the animal does not occur, according to Chasen (1940), who lists it as a valid race from Peninsular Siam).

1897. *Macacus harmandi* Trouessart, Le Naturaliste, *11:* 10. Chantabun, Southern Siam.

Range: Tenasserim to Lower Siam.

Macaca speciosa thibetana Milne-Edwards, 1870

1870. *Macacus thibetanus* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. Near Moupin, Szechuan, China. Emended to *Macacus tibetanus* Milne-Edwards, 1872, Rech. Mamm. 244, pls. 34, 35.

Macaca fuscata Blyth, 1875 Japanese Macaque

Approximate distribution of species: Japan; including Shikoku and Kiushiu, Hondo and Yakushima.

Macaca fuscata fuscata Blyth, 1875

1875. *Macacus fuscatus* Blyth, J. Asiat. Soc. Bengal, *44* (extra number), Cat. Mamm. & Birds, Burma, 6. Japan.

1842. *Inuus speciosus* Temminck, Fauna Japonica, 9. Not of Cuvier, 1825.

1909. *Inuus speciosus japanensis* Schweyer, Anthrop.-Zool. Untersuch. München, 1–192.

MACACA FUSCATA YAKUI Kuroda, 1941

1941. *Macaca fuscata yakui* Kuroda, Monogr. Jap. Mamm. 273. Yakushima Island, Japan.

Macaca sylvana group

– *Macaca sensu stricto.* For characters, see above, page 194)

Macaca sylvana Linnaeus, 1758 Barbary Ape

Approximate distribution of species: Morocco and Algeria. Introduced in Gibraltar.)

MACACA SYLVANA Linnaeus, 1758

1758. *Simia sylvanus* Linnaeus, Syst. Nat. 10th ed. *1:* 25. ("In Africa, Ceylona.") Barbary Coast.
1766. *Simia inuus* Linnaeus, Syst. Nat. 12th ed. *1:* 35. "Africa."
1799. *Simia pithecus* Schreber, Säugeth. Suppl. *1:* pl. 4b.
1812. *Inuus ecaudatus* E. Geoffroy, Ann. Mus. H.N. Paris, *19:* 100. Mediterranean coast of Africa and Gibraltar.
1863. *Pithecus pygmaeus* Reichenbach, Vollständ. Nat. Affen, 145.

Range: as above.

Genus **PAPIO** Muller, 1773

1773. *Papio* Muller, Vollstand. Natursyst. *1*: 118. Usually applied to the baboons (except the hamadryas and gelada), but according to Hopwood the type of this genus should be taken as *Simia sphinx* Linnaeus (the West African Mandrill).
1795. *Cynocephalus* Cuvier & Geoffroy, Mag. Encyclop. *3:* 462. *Simia cynocephalus* Linnaeus. Not of Boddaert, 1768.
1824. *Mandrillus* Ritgen, Nat. Eintheil. Säugeth. 33 (Tafel). (*teste* Palmer.) *Simia maimon* Linnaeus and *Simia mormon* Alströmer, both of which are synonyms of *Simia sphinx* Linnaeus, according to G. Allen.
1839. *Chaeropithecus* Gervais, Dict. Pittor. Hist. Nat. *8:* 90 (prior to 11 May). *Simia cynocephalus* Linnaeus. Valid as a subgenus. If *Papio* is used for the mandrills, then *Chaeropithecus* becomes the name for the baboons except the hamadryas and the gelada).
1839. *Choeropithecus* Blainville, Ostéogr. Mamm. *Pithecus*, 39 (14 June). *Simia cynocephalus* Linnaeus.
1840. *Hamadryas* Lesson, Spec. Mamm. 107. Not of Hubner, 1806. *Hamadryas choeropithecus* Lesson = *Simia hamadryas* Linnaeus.
1862. *Choiropithecus* Reichenbach, Vollständ. Nat. Affen, 151. *Simia porcaria* Boddaert.
1925. *Comopithecus* J. Allen, Bull. Amer. Mus. N.H. *47:* 312. *Simia hamadryas* Linnaeus. To replace *Hamadryas* Lesson, preoccupied. Valid as a subgenus.

1 species in Asia:

Papio hamadryas, page 201

Only one species of this genus occurs in Asia, the others being confined to Ethiopian Africa. This species is sometimes separated generically as *Comopithecus*, e.g. by G. Allen and Simpson. On the other hand, even an extreme splitter like Elliot referred all Baboons to one genus, *Papio*. Hopwood, 1947, *P.Z.S. 117:* 533–536, has shown that the type of *Papio* is *P. sphinx*, the Mandrill, currently referred to a distinct genus *Mandrillus*, and he would call the other Baboons of Africa *Choeropithecus* Blainville, which is antedated by *Chaeropithecus* Gervais. However, we suggest subgeneric rank for all three groups.

The copious mane on the head and shoulders of the male seems to be the most obvious distinguishing character of the subgenus *Comopithecus*.

Subgenus *COMOPITHECUS* J. Allen, 1925

Papio hamadryas Linnaeus, 1758 Sacred Baboon

Approximate distribution of species: Arabia; Somaliland, Abyssinia, Sudan.

(Papio hamadryas hamadryas Linnaeus, 1758. Extralimital)

1758. *Simia hamadryas* Linnaeus, Syst. Nat. 10th ed. *1:* 27. Egypt (where now extinct).
1758. *Simia cynamolgos* Linnaeus, Syst. Nat. 10th ed. *1:* 28. Upper Egypt.
1840. *Hamadryas chaeropithecus* Lesson, Spec. Mamm. 109. Abyssinia, Arabia, Egypt.
1870. *Hamadryas aegyptiaca* Gray, Cat. Monkeys, etc. B.M. 34. New name for *hamadryas* Linnaeus.

Range: Eastern Ethiopia and Eastern Sudan, mainly in the lowlands.

Papio hamadryas arabicus Thomas, 1900

1900. *Papio arabicus* Thomas, P.Z.S. *1899:* 929; and *1900:* 96. Subaihi country, about 60 miles north-west of Aden, Southern Arabia.

Subfamily Colobinae

Genus **RHINOPITHECUS** Milne-Edwards, 1872

1872. *Rhinopithecus* Milne-Edwards, Rech. H.N. Mamm. 233. *Semnopithecus roxellana* Milne-Edwards.
1924. *Presbytiscus* Pocock, Abstr. P.Z.S. 17. *Rhinopithecus avunculus* Dollman. Valid as a subgenus.

Pocock seems to base his name *Presbytiscus* chiefly on the fact that the digits of the hand and feet are relatively longer than in *Rhinopithecus*. The name *Presbytiscus* is ignored by Simpson (1945).

The other members of the genus seem to be not very well known. G. Allen (1939, 300) follows Elliot in listing the three named forms as distinct species. It is difficult to believe that three forms, not occurring together (see Allen's distribution map) and differing apparently only in details of colouring (which might even be seasonal) are

good species, and until the contrary is proved we prefer to regard them as representatives of one species, for which *roxellanae* is the first name.

2 species: *Rhinopithecus avunculus*, page 202
Rhinopithecus roxellanae, page 202

Subgenus *RHINOPITHECUS* Milne-Edwards, 1872

Rhinopithecus roxellanae Milne-Edwards, 1870 — Snub-nosed Monkey, Golden Monkey

Approximate distribution of species, as here understood: China, states of Szechuan (into Southern Kansu), Yunnan and Kweichow.

Rhinopithecus roxellanae roxellanae Milne-Edwards, 1870

1870. *Semnopithecus roxellana* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 341. Near Moupin, Szechuan, China.

1872. *Semnopithecus roxellanae* Milne-Edwards, Rech. H.N. Mamm. 233–243, pls. 36, 37.

Rhinopithecus roxellanae bieti Milne-Edwards, 1897

1897. *Rhinopithecus bieti* Milne-Edwards, Bull. Mus. H.N. Paris, *3:* 157. Kiape, a day's journey from Atuntze (left bank Mekong River), North-Western Yunnan, China. See also Milne-Edwards & Pousargues, 1898, Nouv. Arch. Mus. H.N. Paris (3), *10:* 121–142, pls. 9–12.

Rhinopithecus roxellanae brelichi Thomas, 1903

1903. *Rhinopithecus brelichi* Thomas, P.Z.S. 224, pl. 21. Probably from Northern Kweichow (? Van Gin Shang Range, 29° N., 108° E.), China.

Subgenus *PRESBYTISCUS* Pocock, 1924

Rhinopithecus avunculus Dollman, 1912 — Tonkin Snub-nosed Monkey

Approximate distribution of species: Tonkin, in Indo-China.

Rhinopithecus avunculus Dollman, 1912

1912. *Rhinopithecus avunculus* Dollman, Abstr. P.Z.S. 18; P.Z.S. 503. Yen Bay, Songkoi River, Tonkin, Indo-China.

Genus **PYGATHRIX** E. Geoffroy, 1812

1812. *Pygathrix* Geoffroy, Ann. Mus. H.N. Paris, *19:* 90. *Simia nemaeus* Linnaeus.

It should be noted that although the International Commission of Zoological Nomenclature, in Opinion 114, suppressed the name *Pithecus* (1795, Cuvier & Geoffroy, *Mag. Encycl. 3:* 462, based on the unidentifiable *Simia veter* Linnaeus),

Chasen (1940) declared himself a rebel and continued to use it. Allen, 1938, *Mammals of Mongolia & China*, also continued to use the name. Allen, unlike Chasen, did not attempt to explain his rejection of the Commission's authority and it is interesting to note that one year later, in his Checklist of African Mammals, he quoted Opinion 114, without protest, as the authority for the suppression of *Simia*. At all events, so far as we are concerned, and we believe that most mammalogists are with us, *Pithecus* is dead. Therefore, if all the Langurs are regarded as being congeneric, *Pygathrix* is the valid name.

Pocock (1939) refers the Indian langurs to four genera: *Presbytis*, *Trachypithecus*, *Kasi* and *Semnopithecus*—for reasons which do not convince us, and we here follow Thomas, Simpson and Osgood in dividing the langurs into two genera: *Pygathrix* for the species *nemaeus*, and *Presbytis* for the remainder.

1 species: *Pygathrix nemaeus*, page 203

Pygathrix nemaeus Linnaeus, 1771 Douc Langur

Approximate distribution of species: Indo-China (Annam, Laos, Cochin-China), and has been recorded from Hainan.

For characters and revision, see Pocock, 1935, *P.Z.S. 1934:* 958.

Pygathrix nemaeus nemaeus Linnaeus, 1771

1771. *Simia nemaeus* Linnaeus, Mant. Plant, 521. Cochin-China.

Pygathrix nemaeus nigripes Milne-Edwards, 1871

1871. *Semnopithecus nigripes* Milne-Edwards, Bull. Nouv. Arch. Mus. H.N. Paris, *6:* 7, pl. 1. Saigon, Cochin-China.

1926. *Presbytis nemaeus moi* Kloss, Ann. Mag. N.H. *18:* 214. Langbian Peak, 5,500–6,500 ft., Southern Annam, Indo-China.

Genus **PRESBYTIS** Eschscholtz, 1821

1821. *Presbytis* Eschscholtz, in Kotzebue Reise, *3:* 196, pl. *Presbytis mitratus* Eschscholtz = *Simia aygula* Linnaeus, the Sunda Islands Leaf Monkey, from Java.

1822. *Semnopithecus* Desmarest, Mamm. *2:* 532. *Simia entellus* Dufresne.

1862. *Trachypithecus* Reichenbach, Vollständ. Nat. Affen, 89. *Semnopithecus pyrrhus* Horsfield, from Java.

1862. *Kasi* Reichenbach, Vollständ. Nat. Affen, 101. *Cercopithecus johnii* Fischer.

1879. *Corypithecus* Trouessart, Rev. Mag. Zool. (3), *7:* 53. *Semnopithecus frontatus* Müller, from Borneo.

1879. *Lophopithecus* Trouessart, Rev. Mag. Zool. (3), *7:* 53. *Semnopithecus rubicundus* Müller, from Borneo.

1879. *Presbypithecus* Trouessart, Rev. Mag. Zool. (3), *7:* 56. Substitute for *Presbytis* Reichenbach, 1862, not of Eschscholtz, 1821.

9 species in the area covered by this list:

Presbytis cristatus, page 208
Presbytis entellus, page 204
Presbytis françoisi, page 210
Presbytis johni, page 207
Presbytis melalophos, page 207
Presbytis obscurus, page 209
Presbytis phayrei, page 209
Presbytis pileatus, page 208
Presbytis senex, page 206

We do not know why Chasen (1940) listed a long group of races as forms of *femoralis* which dates from 1838, including among them *melalophos*, which dates from 1821, thus clearly taking priority; nor why he lists *cristatus*, which dates from 1821, as a subspecies of *pyrrhus*, which dates from 1823. He has dealt similarly with *Sus cristatus* 1839 (making *vittatus* 1828 a subspecies), and *Rattus rapit* 1903 (making *lepturus* 1879 a subspecies), and is likely to be widely followed.

See Pocock, 1935, *P.Z.S. 1934:* 895, for a review of the species to the east of the Bay of Bengal, and 1939, *Fauna Brit. India, Mamm. 1*, for the species inhabiting India.

Pocock restricted the name *Presbytis* to the *aygula* group, and he recognized nine species, including *P. aygula* Linnaeus, 1758 (from Java, Sumatra and Borneo), *P. melalophos* and *P. femoralis*. Chasen (1940) only recognizes four species in this group, merging *melalophos* and *femoralis* (as mentioned above). We tentatively follow Chasen in his classification, although we are not sure that *melalophos* as here understood is clearly definable. Pocock referred the Western Indian species *entellus* to the genus *Semnopithecus*, and the species *senex* and *johni* to the genus *Kasi*; distinguishing characters for these groups will be found in his work on the mammals of India. *P. johni* is closely allied to *senex*, and could be regarded as a very distinct subspecies of it. The remaining five species now under discussion were referred by Pocock to the genus *Trachypithecus*. *P. françoisi* seems much the most distinct of these, characterized by black colour combined with very sharply contrasted white head, or cheeks, or rump. In this it resembles the extralimital *P. potenziani*, from which it differs by some skull characters. The remainder are very closely allied to each other, but three of them occur together in Burma, and Pocock has given characters by which apparently they may be distinguished. It must be noted that *cristatus* is the prior name for this section of the genus.

Presbytis entellus group

the genus *Semnopithecus* (Desmarest, 1822) of Pocock, 1939.

Presbytis entellus Dufresne, 1797 Langur (Entellus Monkey)

Approximate distribution of species: Ceylon, Peninsular India, northwards to Sikkim and Kashmir, and extreme Southern Tibet.

PRESBYTIS ENTELLUS ENTELLUS Dufresne, 1797

1797. *Simia entellus* Dufresne, Bull. Soc. Philom. Paris, *1*, 7: 49. Bengal, India. Range: Bengal to Gujerat and Kathiawar.

Presbytis entellus schistaceus Hodgson, 1840

1840. *Semnopithecus schistaceus* Hodgson, J. Asiat. Soc. Bengal, *9:* 1212. Nepal Terai. (Not *schistaceus* Blanford, 1891.)

1840. *Semnopithecus nipalensis* Hodgson, J. Asiat. Soc. Bengal, *9:* 1212.

1928. *Pithecus entellus hector* Pocock, J. Bombay N.H. Soc. *32:* 481. Sitabani, Ramnagar, Kumaon, 2,000 ft., Northern India.

Range: Nepal Terai, Oudh, Kumaon, Garwhal.

Presbytis entellus hypoleucos Blyth, 1841

1841. *Semnopithecus hypoleucos* Blyth, J. Asiat. Soc. Bengal, *10:* 839. Travancore, Southern India.

Presbytis entellus dussumieri Geoffroy, 1843

1843. *Semnopithecus dussumieri* I. Geoffroy, C.R. Acad. Sci. Paris, *15:* 719. Malabar coast, India.

Presbytis entellus anchises Blyth, 1844

1844. *Presbytis anchises* Blyth, J. Asiat. Soc. Bengal, *13:* 470. Deccan, India. Range: Central Provinces and Eastern Ghats.

Presbytis entellus priam Blyth, 1844

1844. *Semnopithecus pallipes* Blyth, Ann. Mag. N.H. *13:* 312 (April). (See Pocock, 1939, *1:* 109, footnote, on synonymy.)

1844. *Semnopithecus priam* Blyth, J. Asiat. Soc. Bengal, *13:* 470 (October). Coromandel coast, India.

1847. *Semnopithecus priamus* Blyth, J. Asiat. Soc. Bengal, *16:* 732.

Range: the Dharmapuri, Shevaroy and Palkonda Hills, and Nilgiri Hills, India.

Presbytis entellus thersites Blyth, 1847

1847. *Presbytis thersites* Blyth, J. Asiat. Soc. Bengal, *16:* 1271. Trincomalee, Ceylon. Range: Ceylon and apparently Travancore (Pocock).

Presbytis (?) entellus lania Elliot, 1909

1909. *Presbytis lania* Elliot, Ann. Mag. N.H. *4:* 273. Chumbi Valley, extreme Southern Tibet.

Presbytis entellus achilles Pocock, 1928

1928. *Pithecus entellus achilles* Pocock, J. Bombay N.H. Soc. *32:* 478. Satthar Hill, Gorkha, 12,000 ft., 50 miles north-west of Katmandu, Nepal.

1888. *Semnopithecus schistaceus* Blanford, Mamm. Brit. India, 30, not of Hodgson, 1840.

Range: Sikkim and Nepal, at high altitudes; ? Kashmir.

Presbytis entellus ajax Pocock, 1928

1928. *Pithecus entellus ajax* Pocock, J. Bombay N.H. Soc. *32:* 480, pl. 2, fig. 1. Deolah, in Chamba, 6,000 ft., Punjab. Range: Chamba, Kangra and Kulu, at high altitudes; ? Kashmir.

Presbytis entellus achates Pocock, 1928

1928. *Pithecus entellus achates* Pocock, J. Bombay N.H. Soc. *32:* 488. Haunsbhavi, Dharwar, 2,000 ft., India. Range: Dharwar, Bellary and Kanara.

Presbytis entellus iulus Pocock, 1928

1928. *Pithecus entellus iulus* Pocock, J. Bombay N.H. Soc. *32:* 490. Jog, Gersoppa Falls, on Kanara-Mysore border, 1,300 ft., India.

Presbytis entellus aeneas Pocock, 1928

1928. *Pithecus entellus aeneas* Pocock, J. Bombay N.H. Soc. *32:* 492. Makut, Southern Coorg, 250 ft., India. Range: Southern Coorg, from Makut to Wottekolli, 2,000 ft.

Presbytis entellus elissa Pocock, 1928

1928. *Pithecus entellus elissa* Pocock, J. Bombay N.H. Soc. *32:* 493. Nagarhole, South-Eastern Coorg, India.

Presbytis entellus priamellus Pocock, 1928

1928. *Pithecus entellus priamellus* Pocock, J. Bombay N.H. Soc. *32:* 494. Shernelly, Cochin, India.

Presbytis senex group

= the genus *Kasi* (Reichenbach, 1862) of Pocock, 1939.

Presbytis senex Erxleben, 1777 Purple-faced Langur

Approximate distribution of species: Ceylon.

Presbytis senex senex Erxleben, 1777

1777. *Cercopithecus senex* Erxleben, Regn. Anim. 24. "Hills of Southern Ceylon."
1852. *Presbytis albinus* Kelaart, Prodr. Faun. Zeyl. 7. Matale, Central Province, Ceylon.
1927. *Pithecus philbricki* Phillips, Ceyl. J. Sci. Sec. B, *14:* 57. Kantalai, East Province, 200 ft., near Trincomalee, Ceylon.

Range: "The hills east of Matale and Madulkelle up to 5,000 ft., also the low-country dry zone of the N.C.P., N.W.P., E.P. and C.P., Ceylon."

Presbytis senex vetulus Erxleben, 1777

1777. *Cercopithecus vetulus* Erxleben, Regn. Anim. 25. Ceylon.
1780. *Cercopithecus kephalopterus* Zimmermann, Geogr. Ges. *2:* 185. "*cephalopterus*" of many subsequent authors. Ceylon.

Range: wettest parts of lowlands of Western and South-Western Ceylon.

Presbytis senex nestor Bennett, 1833

1833. *Semnopithecus nestor* Bennett, P.Z.S. 67. Ceylon, probably Rayigam.
1923. *Pithecus vetulus phillipsi* Hinton, Ann. Mag. N.H. *11:* 510. Gonapola, Panadura district, Ceylon.

Range: low-country wet zone of Western Province, Ceylon.

Presbytis senex monticola Kelaart, 1850

1850. *Presbytis cephalopterus* var. *monticola* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 207 (321 of 1887, reprint). Nuwara Eliya, Ceylon.
1851. *Presbytis ursinus* Blyth, J. Asiat. Soc. Bengal, *20:* 155. Nuwara Eliya, Ceylon.
Range: hill ranges of Ceylon, above 4,000 ft.

Presbytis johni Fischer, 1829 John's Langur

Approximate distribution of species: Coorg, Nilgiri and Palni Hills, in Southern India.

Presbytis johni Fischer, 1829

1829. *Cercopithecus johnii* Fischer, Syn. Mamm. 25. Tellicherry, Southern India.
1834. *Semnopithecus cucullatus* I. Geoffroy, Zool. Voy. Bélanger, 38, pl. 1. The Ghats, Bombay.
1840. *Semnopithecus jubatus* Wagner, Schreber Säugeth. Suppl. *1:* 305. Southern India.
Range: Southern India; Western Ghats, from Coorg southwards, Nilgiri, Anamalai, Brahmagiri, Tinnevelly and Palni Hills, usually not below 3,000 ft. (Pocock).

Presbytis aygula group

= part of the genus *Presbytis* as restricted by Pocock, 1939.

Presbytis melalophos Raffles, 1821 Banded Leaf Monkey

Approximate distribution of species: Tenasserim, Siam, Malay States, Sumatra, Borneo, and some adjacent small islands.

(Presbytis melalophos melalophos Raffles, 1821. Extralimital)

1821. *Simia melalophos* Raffles, Trans. Linn. Soc. London, *13:* 245. Bencoolen, Sumatra.

(Presbytis femoralis Martin, 1838, Charlesworth's Mag. N.H. *2:* 436, Singapore, is also extralimital. Pocock refers the race which occurs in Tenasserim to *femoralis*.)

(It should be noted that the form *Semnopithecus siamensis* Müller & Schlegel, 1841, *Verh. Nat. Ges. Ned. Overz. Bezitt. Zool. Mamm. 60*, listed by Elliot with several synonyms, is a race of *melalophos* but came from the Malay States, not from Siam, and so is extralimital.)

Presbytis melalophos robinsoni Thomas, 1910

1910. *Presbytis robinsoni* Thomas, Abstr. P.Z.S. 25. P.Z.S. 635. Ko-khau, Trang, Lower Siam. Based, according to Pocock, on a partial albino, but antedating the next, which Pocock adopted.
1911. *Presbytis neglecta keatii* Robinson & Kloss, J. Fed. Malay States Mus. *4:* 174. Ko-khau, Trang, Lower Siam. For status see Chasen, 1940, Handlist Malaysian Mamm. 74.
Range: North Malay Peninsula, Junk Seylon Island, Tenasserim, and west of Bangkok, in Siam.

Presbytis cristatus group

the genus *Trachypithecus* (Reichenbach, 1862) of Pocock, 1939.

***Presbytis cristatus** Raffles, 1821 Silvered Leaf Monkey

Approximate distribution of species: Tenasserim, Siam, Indo-China, Malay States, Sumatra, Java, Borneo, and various small adjacent islands.

(Presbytis cristatus cristatus Raffles, 1821. Extralimital)

1821. *Simia cristata* Raffles, Trans. Linn. Soc. London, *13:* 244. Bencoolen, Sumatra.

(This antedates *Semnopithecus pyrrhus* Horsfield, 1823, *Zool. Res. Java*, pt. 7 (unpaged), pl. 3, Java. For date of publication, see Matthews, 1919, *Birds of Australia*, 7, 5: 475, and Oberholser, 1921, *Proc. Biol. Soc. Washington*, *34:* 163–166.)

Presbytis cristatus germaini Milne-Edwards, 1876

1876. *Semnopithecus germani* (misprint for *germaini*) Milne-Edwards, Bull. Soc. Philom. (6), *11:* 8. (The collector's name was Germain, and most authors have emended to *germaini*.) Cochin-China and Cambodia.

1909. *Presbytis margarita* Elliot, Ann. Mag. N.H. *4:* 271. Langbian, Annam.

1916. *Presbytis germaini mandibularis* Kloss, P.Z.S. 32. Koh Chang (Island), South-Eastern Siam.

1919. *Presbytis cristatus koratensis* Kloss, J.N.H. Soc. Siam, *3:* 340. Lat Bua Kao, 30 miles west of Korat, Siam.

Range: Indo-China and Siam.

Presbytis cristatus atrior Pocock, 1928

1928. *Pithecus pyrrhus atrior* Pocock, J. Bombay N.H. Soc. *32:* 673. Ye Forest, 500 ft., south of Moulmein, in Ataran district of Tenasserim. Range includes South-Western Siam.

(?) 1863. *Presbytis barbei* Blyth, Cat. Mamm. Mus. Asiat. Soc. 14. Tipperah Hills. Not *barbei* Blyth, 1847.

Presbytis pileatus Blyth, 1843 Capped Monkey

Approximate distribution of species: Assam and Burma. ? Yunnan (Pocock, 1939, 131 (footnote), suggests that G. Allen's *Pithecus obscurus barbei* may be this species).

Presbytis pileatus pileatus Blyth, 1843

1843. *Semnopithecus pileatus* Blyth, J. Asiat. Soc. Bengal, *12:* 174. Locality unknown. "received from Barrackpore, stated to be Malayan" (Blyth); "no doubt Assam" (Pocock).

1851. *Semnopithecus argentatus* Horsfield, Cat. Mamm. E. India Co. 7. Sylhet.

Range: Garo, Khasi, Jaintia and Naga Hills, Assam, above 4,000 ft.

Presbytis pileatus shortridgei Wroughton, 1915
1915. *Presbytis shortridgei* Wroughton, J. Bombay N.H. Soc. *24:* 56. Homalin, Upper Chindwin, Burma.
1915. *Presbytis shortridgei belliger* Wroughton, J. Bombay N.H. Soc. *24:* 57. Hkamti, Upper Chindwin, Burma.
Range: eastern side of Upper Chindwin, Burma.

Presbytis pileatus brahma Wroughton, 1916
1916. *Presbytis brahma* Wroughton, J. Bombay N.H. Soc. *24:* 654. Seajulia, Dafla Hills, Northern Lakhimpur, Upper Assam.

Presbytis pileatus durga Wroughton, 1916
1916. *Presbytis durga* Wroughton, J. Bombay N.H. Soc. *24:* 655. Cachar, Assam.
1923. *Pithecus pileatus saturatus* Hinton, J. Bombay N.H. Soc. *29:* 81. Bara Hapjan, Lakhimpur, Upper Assam.
Range: Lakhimpur, in Upper Assam, south to Naga Hills, Cachar, Tipperah, Chittagong, and western side Upper Chindwin, Burma. (In Assam, occurring at lower levels than the typical race.)

Presbytis pileatus tenebricus Hinton, 1923
1923. *Pithecus pileatus tenebricus* Hinton, J. Bombay N.H. Soc. *29:* 81. Matunga River, Northern Kamrup. Range includes Assam, north of the Brahmaputra.

Presbytis obscurus Reid, 1837 Dusky Leaf Monkey

Approximate distribution of species: Tenasserim, Lower Siam, Malay States, and some small adjacent islands.

(Presbytis obscurus obscurus Reid, 1837. Extralimital)
1837. *Semnopithecus obscurus* Reid, P.Z.S. 14. Malacca, see Chasen (1940).

Presbytis obscurus sanctorum Elliot, 1910
1910. *Pygathrix sanctorum* Elliot, Proc. U.S. Nat. Mus. *38:* 351. St. Matthew Island, Mergui Archipelago.

Presbytis obscurus flavicauda Elliot, 1910
1910. *Pygathrix flavicauda* Elliot, Proc. U.S. Nat. Mus. *38:* 352. Trang, Lower Siam.
1916. *Presbytis obscura smithi* Kloss, J.N.H. Soc. Siam, *2:* 5. Klong Bang Lai, Patiyu, Peninsular Siam.
1935. *Trachypithecus obscurus corax* Pocock, P.Z.S. *1934:* 944. Tenasserim Town, Tenasserim.
Range: from Northern Malaya northwards to Tavoy, in Tenasserim, and to Pechburi district, South-Western Siam.

Presbytis phayrei Blyth, 1847 Phayre's Leaf Monkey

Approximate distribution of species: Burma, north to Bhamo, Tenasserim, Siam, ? Indo-China.

Pocock (1928) regarded these forms as further races of *obscurus*, but in his later work kept them apart on the ground of their simultaneous occurrence in Tenasserim.

PRESBYTIS PHAYREI PHAYREI Blyth, 1847

1847. *Presbytis phayrei* Blyth, J. Asiat. Soc. Bengal, *16:* 733. Arakan, Burma.

1847. *Presbytis barbei* Blyth, J. Asiat. Soc. Bengal, *16:* 734. Tipperah Hills. (See Pocock, 1939, Fauna Brit. India, Mamm. *1:* 130–131, for notes on synonymy of this form. Not *barbei* Blyth, 1863, and evidently not *P. obscurus barbei* of G. Allen, 1938, Mamm. China & Mongolia, *1:* 294, which Pocock suggests might be a form of *P. pileatus*.)

1909. *Presbytis melamera* Elliot, Ann. Mag. N.H. *4:* 267. Cadu Ciaung, near Bhamo, North-Eastern Burma.

Range: Burma, as far north as Bhamo, south to Pegu.

PRESBYTIS PHAYREI CREPUSCULUS Elliot, 1909

1909. *Presbytis crepuscula* Elliot, Ann. Mag. N.H. *4:* 271. Mt. Mulaiyit, 5,000 ft., Tenasserim.

1909. *Presbytis crepuscula wroughtoni* Elliot, Ann. Mag. N.H. *4:* 272. Pachebon, Central Siam.

1919. *Presbytis argenteus* Kloss, J.N.H. Soc. Siam, *3:* 338. Lat Bua Kao, west of Korat, Siam.

Ranges to Laos and Annam?

PRESBYTIS PHAYREI SHANICUS Wroughton, 1917

1917. *Pithecus shanicus* Wroughton, J. Bombay N.H. Soc. *25:* 47. Se'en, Hsipaw State, Shan States, Burma. Range: North Shan States and their neighbourhood to east of Irrawaddy, in dry zone of Burma.

PRESBYTIS (?) PHAYREI RUHEI Knottnerus-Meyer, 1933

1933. *Presbytis ruhei* Knottnerus-Meyer, Zool. Garten, Leipzig, *6:* 259. Sangora, Southern Siam. From description may belong in this species, but status not sure.

Presbytis françoisi Pousargues, 1898 François' Monkey

Approximate distribution of species: Kwangsi, in Southern China; and Tonkin, Laos and Annam, Indo-China.

For status of this species and for some skull characters by which the species or group seems distinguishable, see Pocock, 1935, *P.Z.S. 1934:* 956–958. Pocock recognized four species, and so did Osgood (1932) who gave a key to them. But as they do not appear to occur together, and the region is a small one, we propose provisionally to regard them as races of the same species.

PRESBYTIS FRANÇOISI FRANCOISI Pousargues, 1898

1898. *Semnopithecus françoisi* Pousargues, Bull. Mus. H.N. Paris, *4:* 319. Lungchow, Province of Kwangsi, Southern China. Range: southwards into Tonkin.

PRESBYTIS (?) FRANÇOISI POLIOCEPHALUS Trouessart, 1911

1911. *Semnopithecus (Lophopithecus) poliocephalus* Trouessart, Ann. Mag. N.H. *8:* 271. Kai-Chin, North-Eastern Tonkin, Indo-China.

Presbytis (?) françoisi laotum Thomas, 1921

1921. *Pithecus laotum* Thomas, Ann. Mag. N.H. *7:* 181. Ban Na Sao, Mekong River, 17.30° N., Laos, Indo-China.

Presbytis (?) françoisi delacouri Osgood, 1932

1932. *Pithecus delacouri* Osgood, Field Mus. N.H. Zool. *18:* 205. Hoi Xuan, North-Eastern Annam, Indo-China.

The name *Simia veter* Linnaeus, 1766, *Syst. Nat.* ed. 12, *1:* 36, supposed to have come from Ceylon, is held to be unidentifiable.

FAMILY PONGIDAE

Subfamily Hylobatinae

This subfamily is given family rank by some authors.

Genus: *Hylobates*, page 211

Genus **HYLOBATES** Illiger, 1811

1811. *Hylobates* Illiger, Prodr. Syst. Mamm. 67. *Homo lar* Linnaeus.
1841. *Symphalangus* Gloger, Gemeinn. Naturg. *1:* 34. *Symphalangus syndactylus* Gloger = *Simia syndactylus* Raffles. Valid as a subgenus.
1932. *Brachitanytes* Schultz, J. Mamm. *13*: 369. *Symphalangus klossii* Miller, from South Pagi Island, west of Sumatra.
1933. *Nomascus* Miller, J. Mamm. *14:* 159. *Hylobates leucogenys* Ogilby. Valid as a subgenus.

On the characters of the subgenera *Hylobates*, see Miller, 1933, *J. Mamm. 14:* 158, 159.

4 species in the area covered by this list:

Hylobates concolor, page 212
Hylobates hoolock, page 212
Hylobates lar, page 212
Hylobates syndactylus, page 213

Authors are not in agreement as to the full number of species in this genus, but the above four are universally admitted. See Pocock, 1927, *P.Z.S.* 719, The Gibbons of the Genus *Hylobates*. Also Chasen, 1940, *Handlist Malaysian Mammals*, 63, in which certain forms referred to *H. lar* by Pocock are given specific rank; one of these, *agilis*, occurs with *lar* in the Malay States.

Subgenus *HYLOBATES* Illiger, 1811

Hylobates lar Linnaeus, 1771 Lar Gibbon

Approximate distribution of species: Sumatra, Malay States, South-Western Siam, Tenasserim, Southern Indo-China (Cambodia).

Hylobates lar lar Linnaeus, 1771. Extralimital)

1771. *Homo lar* Linnaeus, Mant. Plant, 521. Malacca.

Hylobates lar entelloides I. Geoffroy, 1842

1842. *Hylobates entelloides* I. Geoffroy, C.R. Acad. Sci. Paris, *15:* 717. Malay Peninsula, about latitude 12° N. Range: Lower Siam, Tenasserim.

Hylobates lar pileatus Gray, 1861

1861. *Hylobates pileatus* Gray, P.Z.S. 136. Cambodia. Range includes South-Eastern Siam.

Hylobates hoolock Harlan, 1834 Hoolock Gibbon

Approximate distribution of species: Yunnan, Assam and Burma.

Hylobates hoolock Harlan, 1834

1834. *Simia hoolock* Harlan, Trans. Amer. Phil. Soc. *4:* 52, pl. 2. Garo Hills, Assam.
1834. *Hylobates fuscus* Winslow Lewis, J.N.H. Soc. Boston, *1*, 1: 40, pls. 1 and 2. "Vicinity of Himalaya Mountains."
1837. *Hylobates choromandus* Ogilby, P.Z.S. 69. Locality unknown.
1840. *Hylobates scyritus* Ogilby, Royle's Illustr. Bot. Himal., lx. Assam.

Range: Assam, Cachar and Chittagong, through Upper Burma, to north Shan States and Western Yunnan.

Subgenus *NOMASCUS* Miller, 1933

Hylobates concolor Harlan, 1826 Black Gibbon

Approximate distribution of species: Hainan, Indo-China, Siam.

Hylobates concolor concolor Harlan, 1826

1826. *Simia concolor* Harlan, J. Acad. Nat. Sci. Philadelphia, *5*, 4: 231, pls. 9 and 10. Locality unknown. (Hainan or Tonkin, Pocock, 1927.)
1827. *Hylobates harlani* Lesson, Bull. Sci. Nat. Paris, *13:* 111. Substitute for *concolor.*
1840. *Hylobates niger* Ogilby, P.Z.S. 21. Error for *concolor.*
1884. *Hylobates nasutus* Kunkel d'Herculais, Sci. et. Nat. *2:* 86. Near Along Bay, Tonkin, Indo-China.
1892. *Hylobates hainanus* Thomas, Ann. Mag. N.H. *9:* 145. Hainan.
1897. *Hylobates henrici* Pousargues, Bull. Mus. H.N. Paris, *2:* 367. Lai-chau, Tonkin.

Range: Tonkin and Hainan.

HYLOBATES CONCOLOR LEUCOGENYS Ogilby, 1840

1840. *Hylobates leucogenys* Ogilby, P.Z.S. 20. Siam. Range: Siam and Laos.

HYLOBATES CONCOLOR GABRIELLAE Thomas, 1909

1909. *Hylobates gabriellae* Thomas, Ann. Mag. N.H. *4:* 112. Langbian, 1,500 ft., near Nha-trang, 100 km. inland from Phanrang, Southern Annam.

Subgenus *SYMPHALANGUS* Gloger, 1841

Hylobates syndactylus Raffles, 1821 Siamang

Approximate distribution of species: Malay States, Sumatra; Tenasserim (according to Tate, 1947, *Mamm. Eastern Asia*).

(HYLOBATES SYNDACTYLUS SYNDACTYLUS Raffles, 1821. Extralimital)

1821. *Simia syndactyla* Raffles, Trans. Linn. Soc. London, *13:* 241. Bencoolen, Sumatra.

HYLOBATES SYNDACTYLUS CONTINENTIS Thomas, 1908

1908. *Symphalangus syndactylus continentis* Thomas, Ann. Mag. N.H. *2:* 301. Semangko Pass, 3,000 ft., Selangor-Pahang border, Malay States. Range: northwards to Tenasserim ?

ORDER PHOLIDOTA

For the continued use of Pholidota Weber, 1904, in spite of its preoccupation in the Reptilia, see Simpson (1945, 195).

FAMILY: Manidae

For a classification of this family see Pocock, 1924, The External Characters of the Pangolins, Manidae, *P.Z.S.* 707–723, with keys to all living subgenera. Pocock refers the seven existing species of Asia and Africa to six genera and three subfamilies. Simpson (1945) refers them all to a single genus. While not denying the importance and interest of Pocock's work, Simpson's arrangement has much to commend it. Chasen appears to be in agreement, as he ignores Pocock's genus *Paramanis*. G. Allen follows Pocock. We do not consider *Phatages* valid even as a subgenus.

Genus: *Manis*, page 214

Genus **MANIS** Linnaeus, 1758

1758. *Manis* Linnaeus, Syst. Nat. 10th ed. *1:* 36. *Manis pentadactyla* Linnaeus.
1762. *Pholidotus* Brisson, Regn. Anim. 18. Based on *Manis pentadactyla* Linnaeus.
1815. *Pangolinus* Rafinesque, Analyse, 57. No type.
*1821. *Pangolinus* Rafinesque, Ann. Sci. Phys. Brux. *7:* 214. *Manis pentadactyla* Linnaeus.
1843. *Phatages* Sundevall, K. Svenska Vetensk. Akad. Handl. *1842:* 258, 273 (vel *Phatagenus*). *Manis laticauda* Illiger = *Manis crassicaudata* Gray.
1873. *Pangolin* Gray, Handlist Edentate, etc., Mamm. Brit. Mus. 8. Based on *Manis pentadactyla* Linnaeus.
1924. *Paramanis* Pocock, P.Z.S. 722. *Manis javanica* Desmarest. Valid as a subgenus.

There are other, extralimital (African) subgeneric names.

3 species in Asia:

Manis crassicaudata, page 215
Manis javanica, page 215
Manis pentadactyla, page 214

A key to these species is given by Pocock (1924).

Subgenus *MANIS* Linnaeus, 1758

Manis pentadactyla Linnaeus, 1758 Chinese Pangolin

Approximate distribution of species: Formosa, Southern China from Yunnan eastwards to Fukien, north to Kiangsu, and including Hainan; Burma, westwards to Sikkim and Nepal; Indo-China.

Manis pentadactyla pentadactyla Linnaeus, 1758

1758. *Manis pentadactyla* Linnaeus, Syst. Nat. 10th ed. *1:* 36. Formosa.
1777. *Manis brachyura* Erxleben, Regn. An. 98.

Manis pentadactyla aurita Hodgson, 1836.

1836. *Manis auritus* Hodgson, J. As. Soc. Bengal, *5:* 234. Lower and Central Nepal.
1843. *Manis dalmanni* Sundevall, K. Vet. Akad. Handl. Stockholm, *1842:* 256, 278, pl. 4, fig. 10. Near Canton, Southern China.
1872. *Pholidotus assamensis* Fitzinger, S.B. Akad. Wiss. Wien, 57.
1872. *Phatages bengalensis* Fitzinger, *loc. cit.* 72.
1907. *Pholidotus krevenbergi* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 234. Nanking, Kiangsu, China.

Range includes Nepal, Sikkim, Naga Hills in Assam (B.M.), Pegu and Mt. Poppa in Burma, Laos, Tonkin, and Yunnan to Fukien, Anhwei, Kiangsu, etc., in Southern China. G. Allen called this race *M. p. dalmanni*, with *aurita* in the synonymy, but *aurita* takes priority by seven years.

Manis pentadactyla pusilla J. Allen, 1906

1906. *Manis pusilla* J. Allen, Bull. Amer. Mus. N.H. *22:* 465, pl. 69, figs. 1–3. Island of Hainan.

Manis crassicaudata Gray, 1827 Indian Pangolin

Approximate distribution of species: Ceylon, Peninsula of India (Shevaroy Hills, Madras, Mysore, Bellary, Kanara, Coorg), to Cutch and Bengal. (Blanford (1891) who erronoeusly called this species *M. pentadactyla,* said it occurred in Peshawar, Sind and Orissa.) G. Allen thought its range extended to extreme Western Yunnan.

Manis crassicaudata Gray, 1827

1815. *Manis laticauda* Illiger, Abhandl. Preuss. Akad. Wiss. *1804–1811;* 90, *nom. nud.*
1827. *Manis crassicaudatus* Gray, in Griffith's Cuvier Anim. Kingd. *5:* 282. India.
It is customary to date the name *crassicaudata* from Geoffroy, 1803, *Cat. Mamm. Mus. H.N. Paris,* 213, but according to Sherborn this work was never published.
1865. *Pholidotus indicus* Gray, P.Z.S. 368.

Subgenus *PARAMANIS* Pocock, 1924

Manis javanica Desmarest, 1822 Malayan Pangolin

Approximate distribution of species: Burma, Tenasserim, Indo-China, Siam, Malay States, Sumatra, Java, Borneo, many small adjacent islands, east to the Philippines.

Manis javanica Desmarest, 1822

1822. *Manis javanica* Desmarest, Ency. Méth. Mamm. *2:* 377. Java.
1842. *Manis leptura* Blyth, J. Asiat. Soc. Bengal, *11:* 454. Locality unknown.
1847. *Manis leucura* Blyth, J. Asiat. Soc. Bengal, *16:* 1274. Arakan, Burma.
1850. *Manis guy* Focillon, Rev. Mag. Zool. *2:* 513, pl. 10. Locality unknown
Range: as above, in Indo-China, including Laos, Annam, Cochin-China.

ORDER CARNIVORA

Among special works of reference to this Order are:

Miller, G. S. 1912. *Catalogue of the Mammals of Western Europe.*
Allen, G. M. 1938. *Mammals of China & Mongolia, Natural History of Central Asia, 11:* 1. New York (American Museum of Natural History).
—— 1939. A Checklist of African Mammals. *Bull. Mus. Comp. Zool. Harvard, 83.*
Pocock, R. I. 1939, 1941. *The Fauna of British India, Mammals, 1* and *2*; and numerous short papers.
Bobrinskii, N., Kuznetzov, B. & Kuzyakin, A. 1944. *Mammals of the U.S.S.R.* Moscow.
Simpson, G. G. 1945. The Principles of Classification and a Classification of Mammals. *Bull. Amer. Mus. N.H. 85.*
Ognev, S. I. 1931, 1935. *Mammals of Eastern Europe and Northern Asia, 2* and *3.*

Simpson (1945) divides living members of this Order into two superfamilies: Canoidea (containing the families Canidae, Ursidae, Procyonidae and Mustelidae); and Feloidea (containing the families Viverridae, Felidae and Hyaenidae). These superfamilies correspond to the suborders Aeluroidea and Arctoidea of Pocock (1941), and other authors. We prefer to follow Simpson and regard these two groups as of superfamily rank. The classification of Simpson is simpler than that of Pocock, and more conservative. It is here followed, with some small generic modifications.

Neither Simpson nor Pocock give the Seals (Pinnipedia) ordinal rank. Simpson (p. 121) lists them as a suborder, and Pocock considered them as part of the "Arctoidea". However, other authors, as Miller, G. Allen, Ognev and Bobrinskii treated the Pinnipedia as a distinct order. Simpson (p. 232) seems to suggest that the group is an old one, widely separated from the Carnivora as here understood, and the convenience of giving the group ordinal rank seems so marked that we here follow Miller and others, and regard the Pinnipedia as an order distinct from the Carnivora.

FAMILIES: Canidae, page 216
Felidae, page 300
Hyaenidae, page 299
Mustelidae, page 243
Procyonidae, page 242
Ursidae, page 235
Viverridae, page 279

FAMILY CANIDAE

Genera: *Alopex*, page 222
Canis, page 217
Cuon, page 233
Fennecus, page 231
Lycaon, page 234
Nyctereutes, page 222
Vulpes, page 223

Simpson divides existing Canidae into three subfamilies, one of which, the Otocyoninae, is extralimital and doubtless valid. The Cuoninae, or Simocyoninae as listed by Simpson, containing *Cuon* and *Lycaon*, is not supported by Pocock, 1941, 2: 146.

We know of no paper which specially compares the various genera of Canidae with each other. Our translation of Ognev's key to the genera of Canidae in the U.S.S.R. indicates that in *Nyctereutes* the posterior edge of the mandible has a lobate process separated by a notch from the markedly elevated angular process, the latter being short, round, and indistinctly separated from the condylar process by a shallow hollow, thereby differing from the mandibles of *Canis*, *Vulpes* and *Alopex* (and (in B.M. material) also from that of *Fennecus*). Bobrinskii (p. 139) gives a figure of the skull of *Nyctereutes*, which may be compared with Miller's figures of *Canis*, *Vulpes* and

Alopex. There are also external differences, such as the short ears, and rather short limbs, by which *Nyctereutes* may be separated from *Canis*, etc. Generic characters of *Canis*, *Vulpes* and *Alopex* are given by Miller (1912, 304); and those of *Canis* and *Vulpes* are compared with *Cuon* by Pocock (1941, 80). *Fennecus* is like a small *Vulpes*, but with enormous bullae and ears. Pocock did not retain it as a genus, but there seems little doubt that it should be retained. It antedates *Vulpes*. *Lycaon* is largely extralimital, but is included on the basis of a note in G. Allen (1939) on skulls from Tanezrouft, Algeria, which is within the North African Palaearctic; it differs from the other Palaearctic genera in the suppression of the pollex, and is very different from the others in general appearance, its characters including spotted body, large rounded ear, and relatively very large size.

Mivart, 1890, *Monograph of the Canidae*, still seems to be the best general work on this family. There are good figures of all the leading species, but it is out of date in some ways, for instance as regards genera now recognized.

Genus **CANIS** Linnaeus, 1758

1758. *Canis* Linnaeus, Syst. Nat. 10th ed. *1:* 38. *Canis familiaris* Linnaeus (the domestic dog).
1816. *Thos* Oken, Lehrb. d. Naturgesch. *3*, 2: 1037. *Thos vulgaris* Oken = *Canis aureus* Linnaeus.
1816. *Lupus* Oken, Lehrb. d. Naturgesch. *3*, 2: 1039. *Canis lupus* Linnaeus.
1837. *Vulpicanis* Blainville, Ann. Sci. Nat. Paris, Zool. *8*, 2: 279. *Canis aureus* Linnaeus.
1839. *Sacalius* H. Smith, Jardine's Naturalists Library, Mamm. *25:* 214. *Sacalius aureus* (*Canis aureus* Linnaeus).
1841. *Oxygous* Hodgson, Calcutta, J.N.H. *2:* 213. *Canis aureus* Linnaeus.
1855. *Lupulus* Gervais, H.N. Mamm. *2:* 60–62. Not *Lupulus* Blainville, 1843.
1869. *Dieba* Gray, Cat. Carn. Pachyd. & Edentate Mamm. B.M. 180. *Canis anthus* F. Cuvier.
1906. *Lupulella* Hilzheimer, Zool. Beobachter, *47:* 363. *Canis mesomelas* Schreber.
1906. *Schaeffia* Hilzheimer, Zool. Beobachter, *47:* 364. *Canis adustus* Sundevall.
1906. *Alopedon* Hilzheimer, Zool. Beobachter, *47:* 365. *Canis thooides* = *Canis anthus* Cretzschmar *nec* Cuvier.

2 species in the area covered by this list:

Canis aureus, page 220
Canis lupus, page 218

For the characters of the two Palaearctic species see Miller (1912, 305) and Pocock (1941, 82). For a note on the characters of the three widely-distributed African species of Jackals, *C. aureus*, *C. adustus* Sundevall, 1846, and *C. mesomelas* Schreber, 1778, see Hollister, 1918, *Bull. U.S. Nat. Mus. 99:* 101. Hilzheimer, in 1906, named a subspecies of Jackal *Canis lupaster grayi*, from Morocco and Tunis, and G. Allen, in his *Checklist of African Mammals*, for no apparent reason, lists this form as a race of the otherwise Ethiopian species *Canis adustus*. Hilzheimer said that his race was the same as that figured by Gray, 1868, *P.Z.S.* 503. This figure is of *Canis aureus* subsp. It bears no close resemblance to the skull of *Canis adustus*, and there is little evidence that *adustus* occurs in any part of Palaearctic North Africa.

Canis lupus Linnaeus, 1758 Wolf

Approximate distribution of species: formerly widely distributed in Europe, including the British Isles, but now extinct in Western Europe except for Portugal, Spain, Italy, Sicily, Sweden and (occasionally) Norway. Widely distributed in the U.S.S.R. The western limit of the Russian wolves fluctuates considerably, since the animals are much given to wandering, but may be taken as a line running from Sweden, through Finland, and then along the eastern borders of the Baltic States, East Prussia, Poland and Czechoslovakia; thence through Rumania to Yugoslavia and Bulgaria, with occasional extensions into Northern Greece and Turkey. The Asiatic range includes, according to Bobrinskii, Russian Asia ("all over the Union, except Crimea and various northern islands, but inhabits Sakhalin, Bolshoi Lyakhovskii Island, the south island of Novaya Zemlya and Kolguev"); Mongolia, Korea, Japan (if not extinct there), Tibet; Kansu, eastwards to Chihli in China (perhaps, also other parts of China); in India, from Baluchistan and Kashmir southwards, at least to Dharwar, and eastwards to Bengal, and in South-Western Asia, from Persia, Iraq, Asia Minor, Palestine and Arabia. Widely distributed in North America.

For review, see Pocock, 1935 *P.Z.S.* 647.

Canis lupus lupus Linnaeus, 1758

1758. *Canis lupus* Linnaeus, Syst. Nat. 10th ed. *1:* 39. Sweden.
1792. *Canis lupus flavus* Kerr, Anim. Kingd. 137. France and Germany.
1804. *Canis lupus niger* Hermann, Observ. Zool. 32, not of Kerr, 1792. Forest of Hagenau, Alsace.
1804. *Canis lupus communis* Dwigubski, Prod. Faun. Ross. 10. Russia.
1839. *Canis lupus* var. *canus* de Sélys Longchamps, Études de Micromamm. 144, *nom. nud.*
1839. *Canis lupus* var. *fulvus* de Sélys Longchamps, *loc. cit.*, *nom. nud.*
1841. *Lupus orientalis* Wagner, Schreb. Säugeth. Suppl. *2:* 367. Europe.
1863. *Canis lupus* var. *major* Ogérien, H.N. du Jura, *3:* 64. Lower slopes of the Jura.
1863. *Canis lupus* var. *minor* Ogérien, *loc. cit.* Higher portions of the Jura.
1910. *Canis lupus lycaon* Trouessart, Faune Mamm. Europe, 90. Pyrenees.
(?) 1911. *Lupus altaicus* Noack, Zool. Anz. *35:* 465. Chulyshman Glacier, Altai.
(?) 1922. *Canis lupus* var. *orientalis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 350, *nom. nud.* Nec Wagner, 1841.
(?) 1922. *Canis lupus* var. *argunensis* Dybowski, *loc. cit.*, *nom. nud.*

Range: Northern and Central Europe, and forest zone of the U.S.S.R.

Canis lupus albus Kerr, 1792

1792. *Canis lupus albus* Kerr, Anim. Kingd. 137. Near Jenisea, in the eastern part of Asiatic Russia.
(?) 1922. *Canis lupus* var. *kamtschaticus* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 350. Kamtchatka, *nom. nud.*
1923. *Canis* (sic) *lupus turuchanensis* Ognev, Biol. Mitt. Timiriazeff, *1:* 115. Turukhansk region (on Northern Yenesei), Siberia.
(?) 1926. *Canis lupus dybowskii* Domaniewski, Prace Z. Mus. Warsawa, *5:* 52. Golygina, South-Western Kamtchatka.

Range: whole tundra and forest-tundra area of U.S.S.R.

Canis lupus campestris Dwigubski, 1804

1804. *Canis lupus campestris* Dwigubski, Prod. Faun. Ross. 10. In deserts between Black Sea and Caspian, Kirghizia, to River Yenesei.

(?) 1882. *Canis lupus* var. *desertorum* Bogdanov, N.H. Khibinsk Oasis and Desert Kizilkum, 30. (*N.V.*) Kizil Kum Desert, Russian Turkestan.

(?) 1923. *Canis lupus cubanensis* Ognev, Biol. Mitt. Timiriazeff, *1:* 114. Maikop district, Kuban region, Southern Russia (Caucasus).

Bobrinskii lists only one subspecies of *C. lupus* from the deserts and steppes of Central Asia and Kazakstan, which he calls *C. l. desertorum*, but it would seem that *campestris* Dwigubski antedates.

Canis lupus pallipes Sykes, 1831

1831. *Canis pallipes* Sykes, P.Z.S. 101. Deccan, India. Range: the plains of Northern India from Bengal to Sind, south to Dharwar, also Baluchistan, and thence westwards to Iraq and Northern Arabia.

Canis lupus hodophilax Temminck, 1839

1839. *Canis hodophilax* Temminck, Tijdschr. Natuurl. Geschied. Physiol. *5:* 284 (see Harper, 1940. J. Mammal. *21:* 192). Hondo, Japan.

1844. *Canis hodopylax* (sic) Temminck, Fauna Japon. Mamm. 38, pl. 9. Nippon or Hondo, Japan.

1885. *Canis lupus japonicus* Nehring, S.B. Ges. Nat. Fr. Berlin, 141.

Range: Hondo, Japan (said to be extinct, Kuroda, in Harper (1945)).

Canis lupus chanco Gray, 1863

1863. *Canis chanco* Gray, P.Z.S. 94. Chinese Tartary.

1847. *Lupus laniger* Hodgson, Calcutta J.N.H. *7:* 474. Tibet. Not *C. laniger* H. Smith, 1840.

1874. *Canis niger* Sclater, P.Z.S. 655, pl. 78. Not of Kerr, 1792. Hanle, Kashmir.

1883. *Canis ekloni* Przewalski, Third Journey to Tibet, 216, *nom. nud.*

1907. *Lupus filchneri* Matschie, in Filchners Exped. to China, Wiss. Ergebn. *10,* 1: 153. Siningfu, Kansu, China.

1907. *Lupus karanorensis* Matschie, *loc. cit.:* 159. Karanor, in the Gobi.

1907. *Lupus tschiliensis* Matschie, *loc. cit.:* 160. Coast of Chihli, China.

1923. *Canis lupus coreanus* Abe, Dobuts. Zasshi. *35:* 383. Onpeimen, near Seoul, in Keikido Province, Korea.

Range: Russian Pamir, Chinese Turkestan, Tianshan, Tibet, Mongolia, Northern China (including Shensi).

Canis lupus signatus Cabrera, 1907

1907. *Canis lupus signatus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *7:* 195. Escoril, Madrid, Spain.

Canis lupus deitanus Cabrera, 1907

1907. *Canis lupus deitanus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *7:* 197. Moratalla, Murcia, Spain.

CANIS LUPUS ITALICUS Altobello, 1921

1921. *Canis lupus italicus* Altobello, Fauna Dell'Abruzzo del Molise, Mammiferi, *4:* 41. Abruzzi, Italy.

CANIS LUPUS KURJAK Bolkay, 1925

1925. *Canis lupus kurjak* Bolkay, Nov. Mus. Sarajevo, No. 1, 9. Teslić, Bosnia, Yugoslavia.

CANIS LUPUS HATTAI Kishida, 1931

1931. *Canis lupus hattai* Kishida, Lansania, *3,* 25: 73. (M.) City of Sapporo, Hokkaido, Japan.

1935. *Canis lupus rex* Pocock, P.Z.S. 659. Yezo (= Hokkaido). Extinct in Hokkaido, but surviving in Sakhalin and perhaps in the Kuriles (Harper, 1945).

CANIS LUPUS ARABS Pocock, 1934

1934. *Canis lupus arabs* Pocock, Ann. Mag. N.H. *14:* 636. Ain, Southern Arabia, 1,500 ft.

Canis aureus Linnaeus, 1758 Asiatic Jackal

Approximate distribution of species: Balkan States, Rumania, Greece; Russian Turkestan (Western and Southern Turkmenia, Tadzhikistan, whole course of Amu-Darya, Samarkand and Bokhara districts, Middle Syr-Darya), Persia, Iraq, Asia Minor, Afghanistan (according to Bobrinskii), Syria, Palestine, Arabia; Baluchistan and Sind, south through Peninsular India to Ceylon, eastwards to Nepal, Assam, Burma and Siam. Egypt, Libya, westwards to Morocco, Rio de Oro, thence southwards to Senegal, the Sudan, Somaliland, Abyssinia and Kenya.

CANIS AUREUS AUREUS Linnaeus, 1758

1758. *Canis aureus* Linnaeus, Syst. Nat. 10th ed. *1:* 40. Province of Lar, Persia.

1841. *C anis) aureus vulgaris* Wagner, Schreb. Säugeth. Suppl. *2:* 383.

(? 1841. *Canis dalmatinus* Wagner, Schreb. Säugeth. Suppl. *2:* 383. Dalmatia.

1858. *Canis aureus typicus* or *var. caucasica* Kolenati, Reiseerinerungen, *1:* 96.

(? 1892. *Canis aureus balcanicus* Brusina, Glasnik Hrvatskoga Naravoslovnoga Drustva, Zagreb, *7:* 317. Drava River, Croatia. See Pocock, 1938, P.Z.S., Ser. B. *108:* 37, 39, in which it is suggested that *dalmatinus* and *balcanicus* are possibly synonyms of *C. a. anthus* Cuvier, 1820, from Senegal, evidently introduced into Europe.

1896. *Canis hadramauticus* Noack, Zool. Anz. *19:* 356. Arabia. Noack's species is a composite one made from a jackal and a wolf; the jackal was chosen as lectotype by Matschie (see Morrison-Scott, 1939, Nov. Zool. *41:* 201).

1916. *Canis indicus kola* Wroughton, J. Bombay N.H. Soc. *24:* 651. Palanpur, Gujerat, Western India.

Range: Iraq, Persia, Baluchistan, Western India (Cutch, Sind, Gujerat), Arabia, Turkestan.

Canis aureus syriacus Hemprich & Ehrenberg, 1833

1833. *Canis syriacus* Hemprich & Ehrenberg, Symb. Phys. Mamm. text *2*, sig. z, pl. 16. Coast of Lebanon, between Beirut and Tripoli. Range: Syria, Palestine.

Canis aureus lupaster Hemprich & Ehrenberg, 1833

1833. *Canis lupaster* Hemprich & Ehrenberg, Symb. Phys. Mamm. *2*, sig. ff. Fayum, Egypt.

1833. *Canis sacer* Hemprich & Ehrenberg, Symp. Phys. Mamm. *2*, sig. ff. Fayum, Egypt.

Range: Egypt, Palestine (part), according to Bodenheimer, and Libya.

Canis aureus indicus Hodgson, 1833

1833. *Canis aureus indicus* Hodgson, Asiat. Res. *18*, 2: 237. Nepal. Range: Nepal, Sikkim, Bhutan, Assam, Burma, Siam.

Canis aureus moreoticus I. Geoffroy, 1835

1835. *Canis aureus* var. *moreotica* Geoffroy, Exped. Sci. de Morée, Zool. pl. 1. Morea, Greece.

1841. *Canis graecus* Wagner, Schreb. Säugeth. Suppl. *2:* 383. Peloponesus, Greece.

Range: Greece, Asia Minor and Caucasus (Pocock, who used this name for the European jackals).

Canis aureus algirensis Wagner, 1841

1839. *Sacalius barbarus* H. Smith, Nat. Lib. Jardine Mamm. *25:* 218. Tunis. Not of Shaw, 1800.

1841. *Canis aureus algirensis* Wagner, Schreb. Säugeth. Suppl. *2:* 384. Algeria.

1841. *Canis aureus tripolitanus* Wagner, *loc. cit.* No locality; Tripoli, Tunis implied.

(?) 1906. *Canis lupaster grayi* Hilzheimer, Zool. Beobachter, *47:* 367. Morocco and Tunis.

1906. *Canis studeri* Hilzheimer, Zool. Beobachter, *47:* 368. Tunis.

Canis (?) aureus cruesemanni Matschie, 1900

1900. *Canis cruesemanni* Matschie, S.B. Ges. Nat. Fr. Berlin, 145. Menam, Siam. Status doubtful; based on living captive specimens.

Canis aureus soudanicus Thomas, 1903

1903. *Canis aureus soudanicus* Thomas, P.Z.S. *1:* 295. El Obeid, Kordofan, Sudan.

(?) 1826. *Canis variegatus* Cretzschmar, in Rüpp. Atlas Reise nördl. Afrika, Säugeth. 31, pl. 10. Not *Canis familiaris variegatus* Gmelin, 1788. Nubia and Upper Egypt.

1906. *Canis doederleini* Hilzheimer, Zool. Anz. *30:* 116. Upper Egypt.

1921. *Thos aureus nubianus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *21:* 264. To replace *variegatus* Cretzschmar, preoccupied.

Canis aureus naria Wroughton, 1916

1916. *Canis naria* Wroughton, J. Bombay N.H. Soc. *24:* 651. Virajpet, Southern Coorg, 3,000 ft., India. Range: Southern Peninsular India.

Canis aureus lanka Wroughton, 1916

1916. *Canis lanka* Wroughton, J. Bombay N.H. Soc. *24:* 652. Mankeni, East Province, Ceylon.

Canis aureus maroccanus Cabrera, 1921

1921. *Thos lupaster maroccanus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *21:* 263. Mogador, Morocco.

Canis aureus ecsedensis Kretzoi, 1947

1947. *Thos aureus ecsedensis* Kretzoi, Ann. Mus. Nat. Hung. *40:* 287. Tyukod, Szatmár, Hungary. Proposed to replace *hungaricus.*

1938. *Canis aureus hungaricus* Ehik, Ann. Mus. Nat. Hung. *31* (Zool.): 11. Said to be preoccupied by *Canis familiaris hungaricus* Margo, 1891, the reference to which has not been traced.

1897. *Canis lupus minor* Mojsisovico, Das Thierleben d. Ost. Ung. Tiefebenen, 244. Northern Hungary. Said to be preoccupied by *Canis spelaeus minor* Wagner, 1831, the reference to which has not been traced. Not of Ogérien, 1863.

Genus **ALOPEX** Kaup, 1829

1829. *Alopex* Kaup, Skizz. Europ. Thierw. *1:* 83, 85. *Canis lagopus* Linnaeus.

1868. *Leucocyon* Gray, P.Z.S. 521. *Canis lagopus* Linnaeus.

Bobrinskii, 1944, *Mammals U.S.S.R.* 146, regards *Alopex* as a subgenus of *Vulpes.*

1 species: *Alopex lagopus*, page 222

Alopex lagopus Linnaeus, 1758 Arctic Fox

Approximate distribution of species: Norway, Sweden, Spitzbergen, Iceland, Arctic regions of U.S.S.R., from European Russia to Kamtchatka and the Pacific, and perhaps south to Kurile Islands; also in Northern North America.

Alopex lagopus lagopus Linnaeus, 1758

1758. *Canis lagopus* Linnaeus, Syst. Nat. 10th ed. *1:* 40. Lapland.

1816. *Vulpes arctica* Oken, Lehrb. d. Naturgesch. *3*, 2: 1033.

1820. *Canis vulpes caerulea* Nilsson, Skand. Fauna, *1:* 88. Lapland.

1827. (*Canis lagopus*) *argenteus* Billberg, Synop. Faunae Scandinaviae, 14. Lapland.

1898. *Canis lagopus typicus* Barrett-Hamilton & Bonhote, Ann. Mag. N.H. *1:* 287.

Range: apparently the mainland range of the species.

Alopex lagopus fuliginosus Bechstein, 1799

1799. *Canis fuliginosus* Bechstein, Thomas Pennants allgem. Uebersicht d. vierf. Thiere, *1:* 270. Iceland. Available if the Iceland race proves distinguishable.

Alopex lagopus spitzbergenensis Barrett-Hamilton & Bonhote, 1898

1898. *Canis lagopus spitzbergenensis* Barrett-Hamilton & Bonhote, Ann. Mag. N.H. *1:* 287. Spitzbergen.

ALOPEX LAGOPUS BERINGENSIS Merriam, 1902

1902. *Vulpes beringensis* Merriam, Proc. Biol. Soc. Washington, *15:* 171. Bering Island, Bering Sea, Eastern Siberia.
1920. *Alopex beringianus* Cherski, Komandorskinesez, Tokyo, 60 (*N.V.*)

Genus **VULPES** Oken, 1816

1775. *Vulpes* Frisch, Natur-system der vierfuss. Thiere, 15 (see page 3).
1816. *Vulpes* Oken, Lehrb. d. Naturgesch, *3*, 2: 1033, 1034. *Vulpes vulgaris* Oken = *Canis vulpes* Linnaeus (see page 3).
1822. *Vulpes* Fleming, Philosophy of Zool. Edinburgh, *2:* 184. *Canis vulpes* Linnaeus.
1839. *Cynalopex* H. Smith, Jardine's Nat. Library, Mamm. *25:* 222. *Canis corsac* Linnaeus.

6 species in the area covered by this list:

Vulpes bengalensis, page 230	*Vulpes ferrilata*, page 231
Vulpes cana, page 231	*Vulpes rüppelli*, page 230
Vulpes corsac, page 229	*Vulpes vulpes*, page 225

In an attempt to correlate the work of Pocock, 1941, *Fauna Brit. India, 2:* 110; Miller, 1912, *Cat. Mamm. W. Europe;* Bobrinskii, 1944, *Mamm. U.S.S.R.*; and G. Allen, 1938, *Mamm. China & Mongolia*, and to add notes on the outlying forms of the genus from Africa, South-Western Asia and Japan, the following results have been obtained:

1. Back of the ears black or dark brown, contrasting strongly with colour of head and nape. *VULPES VULPES*
   (Forms available for examination: *karagan, crucigera, aegyptiaca, montana, atlantica, flavescens, pusilla, griffithi, japonica, hoole, beringiana, arabica, silacea, induta, ichnusae, anatolica, palaestina.*)
   Back of the ears generally same colour as the head and neck, never strongly contrasted. ——2

2. Tail less than half head and body length; ear less than or equal to half the length of the hindfoot (according to the published measurements of Pocock, G. Allen and Mivart). ——3
   Tail clearly more than half length of head and body (normally). Ear clearly more than half length of hindfoot. ——4

3. Skull much larger; bullae appear larger; muzzle long and narrow; upper canine elongated, clearly larger than combined length of P 4 and M 1 in upper jaw. *VULPES FERRILATA*
   Skull considerably smaller; bullae appear smaller; muzzle not specially elongated nor narrow; upper canine scarcely or only a little exceeding combined length of P 4 and M 1 in upper jaw. *VULPES CORSAC*
   (Not well represented in London: three skulls only and a few unmeasured skins.)

4. Tail tip clearly contrasted white; or, in the case (one specimen available) of *zarudnyi*, whole tail appears whitish. *VULPES RÜPPELLI*
(Forms available for examination: *rüppelli*, *caesia*, *zarudnyi*, *sabaea*, *somaliae* (Thomas, 1918, from Somaliland).)

Tail tip normally clearly contrasted black; never sharply contrasted white. ——5

5. Larger species; head and body length, with few exceptions, not less than 460 mm. ——6

Smaller species; head and body length in the majority of specimens does not exceed 420 mm. ——7

6. Ear length normally 85 mm. and more. *VULPES CHAMA* (Smith, 1833)
(Extralimital; from South Africa.)

Ear length 84 mm. and less, but in the very considerable series in the British Museum, only three specimens as long as 81 mm. *VULPES BENGALENSIS*

7. Fur very thick; darker in colour; a dark middorsal line traceable in all skins; black tailtip weaker. Ear (of one skin) 88 mm. *VULPES CANA*

Fur thin and short; colour pale; no middorsal line; black tailtip normally very sharply contrasted. Ear not exceeding 75 mm. in British Museum skins. (Extralimital) *VULPES PALLIDA* Cretzschmar, 1826

(Forms available for examination: *pallida*, Sudan; *edwardsi*, Rochebrune, 1833, Senegambia; and *harterti* Thomas & Hinton, 1921, Northern Nigeria.)

Measurements in the above key for *V. cana* and *V. ferrilata* are mainly based on those given by Pocock (1941). There is very little data on exact measurements of *Vulpes corsac*, which is the second name in the genus. Measurements given by G. Allen, and Mivart, suggest that it is correctly placed in the above key. In appearance, *bengalensis* is not very widely separated from it. It is, according to Bobrinskii, a larger animal than *V. cana*. This author notes it as with ears and tail comparatively short. *Vulpes ferrilata* seems in some ways the most distinct of the species. Its dental and cranial characters given in the key contrast with all other Indian species. *V. vulpes* is at extreme development the largest species. *V. rüppelli* has large ears, 80 mm. at lowest, and up to 100 mm. in British Museum material. Normally it is larger than *pallida*, but the Arabian race may sometimes be an exception. It occurs in the same general neighbourhood as *pallida*, and compared with its immediate allies its white tailtip seems very distinctive. We can trace no fox in Central Tropical Africa; that is to say, south of the Senegal-Northern Nigeria-Sudan-Somaliland line; north of Angola and South-West Africa. (The British Museum possesses *Vulpes* skins from Angola.) *V. chama* seems geographically isolated in the south. In Africa, *V. vulpes* is strictly Palaearctic. The form *dorsalis* listed by G. Allen from Senegal is a jackal, probably *Canis aureus*; type skin in British Museum.

G. Allen, 1939, listed the Libyan form *cyrenaica* as a race of *V. pallida*, but from the description it is much more likely that it represents *V. rüppelli*.

Vulpes vulpes group

Vulpes vulpes Linnaeus, 1758 Common Red Fox

Approximate distribution of species: essentially throughout the Palaearctic region; in South-Eastern Asia south of it into Yunnan, Fukien, and Northern Indo-China; and, according to Pocock, also much of North America.

(In detail: British Isles, Ireland included; France, Belgium, Holland, Denmark, Norway, Sweden, Germany, Switzerland, Spain, Portugal, Italy, Sardinia, Poland, Rumania, Greece, doubtless other European countries; the whole of the U.S.S.R. ("but it apparently does not penetrate into the interior of the tundra, and fails to occur in the extreme north of Siberia and on nearly all the islands of the Arctic Ocean and Bering Sea, only appearing on Kolguev Island and the south island of Novaya Zemlya; occurs in Sakhalin" (Bobrinskii)); Arabia, Persia, Afghanistan, Cyprus, Palestine, Iraq, Asia Minor; Western Sinkiang (Ognev), Mongolia, Japan, Manchuria, Tibet, and the states of Yunnan and Fukien northwards in China; India, from Rajputana, Sind, Cutch and Khandesh, northwards to Baluchistan, Waziristan, Punjab, Kashmir, Sikkim; Tonkin, in Indo-China; Egypt, Algeria, Libya and Morocco.)

Vulpes vulpes vulpes Linnaeus, 1758

1758. *Canis vulpes* Linnaeus, Syst. Nat. 10th ed. *1:* 40. Sweden.
1758. *Canis alopex* Linnaeus, Syst. Nat. 10th ed. *1:* 40. Sweden.
1816. *Vulpes vulgaris* Oken, Lehrb. Nat. *3*, 2: 1034.
1820. *Canis nigro-argenteus* Nilsson, Skand. Fauna, *1:* 91. Lofoten Islands, Norway.
1827. *Canis vulpus nigrocaudatus* Billberg, Synop. Faunae Scandinaviae, 12. Uppland, Sweden.
1827. *Canis vulpus variegatus* Billberg, *loc. cit.* 13. Uppland, Sweden.
1827. *Canis vulpus lineatus* Billberg, *loc. cit.* 13. Skåne, Sweden.
1830. *Vulpes communis* Burnett, Quart. J. Sci. Lit. Art. *1829*, 2: 349, *nom. nud.*

Range: Scandinavia.

Vulpes vulpes karagan Erxleben, 1777

1777. *Canis karagan* Erxleben, Syst. Regn. Anim. Mammalia, 566. Kirghiz Steppes, Russian Asia.
1811. *Canis melanotus* Pallas, Zoogr. Ross. Asiat. *1:* 44.
1926. *Vulpes vulpes karagan* natio *ferganensis* Ognev, Ann. Mus. Budapest, *23:* 222. Osh, Fergana, Russian Turkestan.
1926. *Vulpes vulpes karagan* natio *pamirensis* Ognev, *loc. cit.* Pamir Mountains.

Range: Kirghiz and Kazakstan steppes, to Mongolia.

Vulpes vulpes crucigera Bechstein, 1789

1789. *Canis crucigera* Bechstein, Gemeinn. Nat. Deutschlands, *1:* 250. Thuringia, Germany.
1792. *Canis vulpes alopex europaeus* Kerr, Anim. Kingd. 142. Burgundy, France.
1797. *Canis vulpes alba* Borkhausen, Deutsche Fauna, *1:* 33. Vogelsberg, Hesse, Germany. Not of Kerr, 1792.
1797. *Canis vulpes nigra* Borkhausen, *loc. cit.* Hesse and Thuringia, Germany.

VULPES VULPES CRUCIGERA [*contd.*]

1801. *Canis vulpes lutea* Bechstein, Gemeinn. Nat. Deutschlands, *1*, 2nd ed.: 628. Thuringia, Germany.
1801. *Canis vulpes cinera* Bechstein, *loc. cit.* Thuringia, Germany.
1832. *Canis melanogaster* Bonaparte, Iconogr. Fauna Ital. *1:* fasc. 1. Near Rome, Italy.
1841. *Vulpes hypomelas* Wagner, Schreb. Säugeth. Suppl. *2:* 405. Oberbayern, Germany.
?) 1855. *Vulpes vulgaris meridionalis* Fitzinger, Wissensch. pop. Nat. der Säugeth. *1:* 194. Dalmatia. (Published in 1860 according to Mirić, D., Z. Saugetierk. 1960, *25*: 45).

Range: British Isles, France, Germany, Switzerland, Italy, Sardinia, Greece, forested parts of Northern and Central Russia.

VULPES VULPES BARBARA Shaw, 1800

1800. *Canis barbarus* Shaw, Gen. Zool. *1*, Mamm. pt. 2, 311. Barbary, i.e. coast of North-Western Africa.
1916. *Vulpes vulpes acaab* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *16:* 384. Marraquex, Western Morocco.

VULPES VULPES AEGYPTIACA Sonnini, 1816

1816. *Canis aegyptiacus* Sonnini, Nouv. Dict. Sci. Nat. *6:* 524. Egypt.
1820. *Canis niloticus* Desmarest, Encyclop. Méthod. Mamm. 204. Egypt.
1833. *Canis anubis* Hemprich & Ehrenberg, Symp. Phys. Mamm. dec. 2, sig. ff. Fayum, Egypt.
1833. *Canis vulpecula* Hemprich & Ehrenberg, *loc. cit.* Fayum, Egypt.

Range: Egypt, Libya and Palestine (according to Bodenheimer).

VULPES VULPES MONTANA Pearson, 1836

1836. *Canis vulpes montana* Pearson, J. Asiat. Soc. Bengal, *5:* 313. (January, 1836.) Himalayas.
1837. *Canis himalaicus* Ogilby, P.Z.S. *1836*, 103. (20 February 1837.) Mussooree, Kumaon, North-Western India.
1837. *Vulpes nepalensis* Gray, Charlesw. Mag. N.H. *1:* 578. Nepal.
1888. *Vulpes alopex* Blanford, Mamm. British India, 153. Not of Linnaeus, 1758.
1906. *Vulpes waddelli* Bonhote, Abstr. P.Z.S. 14; P.Z.S. 303. Kambajong, Tibet.
1907. *Vulpes ladacensis* Matschie, Wiss Ergebn. Filchners Exped. China, *10*, 1: 167. Ladak.

Range: Sikkim, Yunnan, Tibet, Kumaon, Nepal, Punjab, to Gilgit.

VULPES VULPES ATLANTICA Wagner, 1841

1841. *Canis vulpes* var. *atlantica* Wagner, Reisen in d. Regenschaft Algier, *3:* 31, 62, pl. 3. Atlas Mountains, Mitiya, Algeria.
1858. *Vulpes algeriensis* Loche, Cat. Mamm. et Oiseaux observés en Algérie, 4. Wooded parts of Algeria.

VULPES VULPES FLAVESCENS Gray, 1843

1843. *Vulpes flavescens* Gray, Ann. Mag. N.H. *11:* 118. Northern Persia.
1902. *Vulpes vulpes splendens* Thomas, Ann. Mag. N.H. *10:* 489. Astrabad, Persia.
1912. *Vulpes vulpes flavescens* var. *cinerascens* Birula, Ann. Mus. Zool. Acad. Sci. St. Petersb. *17:* 254. Khorasan, Persia.

Range: Persia, and Palestine (according to Bodenheimer).

VULPES VULPES PUSILLA Blyth, 1854

1854. *Vulpes pusillus* Blyth, J. Asiat. Soc. Bengal, *23:* 729. Salt Range, Punjab.
1854. *Vulpes leucopus* Blyth, J. Asiat. Soc. Bengal, *23:* 729. Multan, Punjab.
1875. *Vulpes persicus* Blanford, Ann. Mag. N.H. *16:* 310. Shiraz, Persia.
Range: North-Western India, from Punjab to Rajputana, Sind, Cutch and Khandesh; Baluchistan, Southern Persia and Iraq.

VULPES VULPES GRIFFITHI Blyth, 1854

1854. *Vulpes griffithi* Blyth, J. Asiat. Soc. Bengal, *23:* 730. Kandahar, Afghanistan.
1845. *Vulpes flavescens* Hutton, J. Asiat. Soc. Bengal, *14:* 344, not of Gray, 1843.
Range: Afghanistan, Waziristan, Murree in Northern Punjab.

VULPES VULPES JAPONICA Gray, 1868

1868. *Vulpes japonica* Gray, P.Z.S. 517. Japan. Range includes Hondo, Shikoku and Kiushiu, Japan.

VULPES VULPES HOOLE Swinhoe, 1870

1870. *Vulpes hoole* Swinhoe, P.Z.S. 631. Near Amoy, Fukien, Southern China.
1870. *Vulpes lineiventer* Swinhoe, P.Z.S. 632. Near Amoy, Fukien.
1907. *Vulpes aurantioluteus* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10,* 1: 168. Tatsienlu, Szechuan, China.
1923. *Vulpes ferrilatus eckloni* Jacobi, Abh. u. Ber. Mus. f. Tier. u. Volkerk, Dresden, *16:* 6. Bamutang, three days south-west from Batang, Szechuan, China. Not of Przewalsky, 1884.
Range: Szechuan, eastwards to Fukien in Southern China.

VULPES VULPES BERINGIANA Middendorff, 1875

1875. *Canis vulpes* var. *beringiana* Middendorff, Uber Nat. Nord. Ost. Sibir. *4,* 2: 990. Shore of Bering Straits, North-Eastern Siberia.
1903. *Vulpes anadyrensis* J. Allen, Bull. Amer. Mus. N.H. *19:* 167. Marcova, Anadyr Province, Eastern Siberia.
1911. *Vulpes kamtschadensis* Brass, Aus dem Reich. Pelze, 456.
1922. *Vulpes alopex* var. *kamtschatica* Dybowski, Arch. Tow Nauk. Lwow, *1:* 350. Kamtchatka, *nom. nud.*
Range: North-Eastern Siberia, including Kamtchatka and Anadyr region.

VULPES VULPES ARABICA Thomas, 1902

1902. *Vulpes vulpes arabica* Thomas, Ann. Mag. N.H. *10:* 489. Muscat, Arabia. Ranges south to Aden, north-west to Syria (B.M.).

VULPES VULPES ALPHERAKYI Satunin, 1906

1906. *Vulpes alpherakyi* Satunin, Isv. Kauk. Mus. *2 (1905)*: 46. Geok Tepe, Aralsk subdistrict of former Govt. of Elisabetpol, Russian Turkestan.

VULPES VULPES KURDISTANICA Satunin, 1906

1906. *Vulpes kurdistanica* Satunin, Isv. Kauk. Mus. *2 (1905)*: 48–53. Gelsk Valley, Kars district, Western Transcaucasia (probably in extreme North-Eastern Asia Minor).

VULPES VULPES ICHNUSAE Miller, 1907

1907. *Vulpes ichnusae* Miller, Ann. Mag. N.H. *20:* 391. Sarrabus, Sardinia. Range: Sardinia, Corsica.

VULPES VULPES INDUTA Miller, 1907

1907. *Vulpes indutus* Miller, Ann. Mag. N.H. *20:* 392. Cape Pyla, Cyprus.

VULPES VULPES SILACEA Miller, 1907

1907. *Vulpes vulpes silaceus* Miller, Ann. Mag. N.H. *20:* 393. Near Silos, Burgos, Spain.

VULPES VULPES TSCHILIENSIS Matschie, 1907

1907. *Vulpes tschiliensis* Matschie, Wiss. Ergebn. Filchner Exped. to China, *10*, 1: 169. Peiping, Chihli, North-Eastern China.

(?) 1923. *Vulpes huli* Sowerby, Nat. in Manchuria, *2:* 44. Manchuria.

Range: Chihli, Shansi, Shensi, Kansu in Northern China, Manchuria?

VULPES VULPES STEPENSIS Brauner, 1914

1914. *Vulpes vulpes stepensis* Brauner, Sapiski Novoros ob Estest. *11:* 15. (*N.T.*) Steppes near town of Kherson, Russia. Range: Black Sea-Azov steppes, Southern Russia.

VULPES VULPES KRIMEAMONTANA Brauner, 1914

1914. *Vulpes vulpes krimeamontana* Brauner, Sapiski Novoros ob. Estest. *11:* 15–36. (*N.T.*) Mountains of Crimea, Southern Russia.

VULPES VULPES CAUCASICA Dinnik, 1914

1914. *Vulpes alopex* var. *caucasica* Dinnik, Sverikankasa, *2:* 449. (*N.T.*) Near town of Vladikawkaz, Caucasus.

VULPES VULPES ANATOLICA Thomas, 1920

1920. *Vulpes vulpes anatolica* Thomas, Ann. Mag. N.H. *5:* 121. Smyrna, Western Asia Minor.

VULPES VULPES PALAESTINA Thomas, 1920

1920. *Vulpes vulpes palaestina* Thomas, Ann. Mag. N.H. *5:* 122. Ramleh, near Jaffa, Palestine. Range: Palestine and Lebanon.

VULPES VULPES JAKUTENSIS Ognev, 1923

1923. *Vulpes vulpes jakutensis* Ognev, Biol. Mitt. Timiriazeff, *1:* 116. Taiga south from town of Yakutsk, Eastern Siberia.

VULPES VULPES DILUTA Ognev, 1924

1924. *Vulpes vulpes crucigera diluta* Ognev, Faun. Voronez Gub. 102–110. Steppe of Kamennaia, Bobrov subdistrict of Govt. of Voronej, Russia. A valid race, according to Bobrinskii, from the forest-steppe areas of European Russia.

VULPES VULPES SCHRENCKI Kishida, 1924

1924. *Vulpes vulpes schrencki* Kishida, Mon. Jap. Mamm. 47. Sakhalin. Range: to Kurile Islands and Hokkaido.

Vulpes vulpes splendidissima Kishida, 1924

1924. *Vulpes vulpes splendidissima* Kishida, Mon. Jap. Mamm. 47. North and Central Kurile Islands.

Vulpes vulpes peculiosa Kishida, 1924

1924. *Vulpes peculiosa* Kishida, Chôsen. Hantô san no Kitsuna, 4. (*N.V.*) Korea.

Vulpes vulpes ochroxantha Ognev, 1926

1926. *Vulpes vulpes ochroxantha* Ognev, Ann. Mus. Budapest, *23:* 225. Aksai, Semirechyia, Eastern Russian Turkestan.

Vulpes vulpes tobolica Ognev, 1926

1926. *Vulpes vulpes tobolica* Ognev, Ann. Mus. Budapest, *23:* 227. Obdorsk, Govt. of Tobolsk, Siberia. Range: lower parts of basin of middle and lower Ob River.

Vulpes (?) vulpes dolichocrania Ognev, 1926

1926. *Vulpes dolichocrania* Ognev, Ann. Mus. Budapest, *23:* 232. Sidemi, region of Southern Ussuri, South-Eastern Siberia. Not listed as a valid form by Bobrinskii, 1944.

Vulpes vulpes alticola Ognev, 1926

1926. *Vulpes vulpes alticola* Ognev, Bull. Sci. Inst. Explor. Caucas. *1:* 52, 56. Lake Gokcha, Transcaucasia (Armenia).

Vulpes vulpes daurica Ognev, 1931

1931. *Vulpes vulpes daurica* Ognev, Mamm. East Europe, *2:* 331. Kharangoi, 45 km. west from town of Troizkosavsk, Siberia.

(?) 1922. *Vulpes alopex* var. *ussuriensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 350, *nom. nud.*

Range: Amur, Transbaikalia.

Incertae sedis

Vulpes alopex var. *sibiricus* Dybowski, 1922, Arch. Tow. Nauk. Lwow, *1:* 350, *nom. nud.*

Vulpes kiyomasai Kishida & Mori, 1929, Lansania, *1:* 82, North-Eastern Korea; based on a live specimen in Seoul Zoo.

Vulpes fuliginosus Gray, 1863, Cat. Hodgson Coll. B.M. 6. No locality.

Vulpes corsac group

Vulpes corsac Linnaeus, 1768 Corsac Fox

Approximate distribution of species: South-Eastern Russia (Kalmuik steppes), Volgo-Ural steppes, Russian Turkestan and Kirghizia, to Chinese Turkestan (Zungaria, Bobrinskii), Mongolia, Transbaikalia, and, according to Bobrinskii, Northern Manchuria, and Northern Afghanistan. (Blanford quoted it from Persia.)

VULPES CORSAC CORSAC Linnaeus, 1768

1768. *Canis corsac* Linnaeus, Syst. Nat. 12th ed. *3:* appendix, 223. Steppes between the Ural and Irtish Rivers, Russian Asia.
1884. *Canis eckloni* Przewalski, Reis. Tibet, 111. Kukunor.
1912. *Vulpes corsac nigra* Kastschenko, Ann. Mus. St. Pétersb. *17:* 393. Transbaikalia. Not of Borkhausen, 1797.
? 1944. *Vulpes corsac scorodumovi* "Dorogostajski, 1935", Bobrinskii, Mamm. U.S.S.R. 146 (footnote). Transbaikalia. We are unable to trace an earlier reference to this form than that of Bobrinskii, 1944, and that author states the form is "of very doubtful reality".

Range: northern parts of range of the species, Chkalov(=Orenburg Province), Northern Kazakstan, Cis-Altai steppes, Mongolia, Transbaikalia.

VULPES CORSAC KALMYKORUM Ognev, 1935

1935. *Vulpes corsac kalmykorum* Ognev, Mamm. U.S.S.R. *3:* 634. Kalmuck Steppe, Astrakhan, South-Eastern Russia.

VULPES CORSAC TURKMENICA Ognev, 1935

1935. *Vulpes corsac turkmenicus* Ognev, Mamm. U.S.S.R. *3:* 635. Turkmen Desert, Russian Turkestan.

Vulpes bengalensis Shaw, 1800 Bengal Fox

Approximate distribution of species: Southern Peninsular India, Travancore, northwards to Sind, Bihar and Orissa, Kangra in Punjab, Haldibari (just south of Sikkim), and Nepal.

VULPES BENGALENSIS Shaw, 1800

1800. *Canis bengalensis* Shaw, Gen. Zool. *1*, 2: 330. Bengal.
1831. *Canis kokree* Sykes, P.Z.S. 101. Deccan, India.
1833. *Canis (Vulpes) indicus* Hodgson, Asiat. Res. *18*, 2: 237. India. Not *Canis aureus indicus* Hodgson, *loc. cit.*
1834. *Canis (Vulpes) rufescens* Gray, Hardwicke's Ill. Ind. Zool. *2*, pl. 3. India.
1837. *Canis chrysurus* Gray, Charlesw. Mag. N.H. *1:* 577. Nepal.
1837. *Vulpes hodgsonii* Gray, Charlesw. Mag. N.H. *1:* 578. Nepal.
1838. *Vulpes xanthura* Gray, P.Z.S. *1837:* 68. Nepal.

Vulpes rüppelli Schinz, 1825 Sand Fox

Approximate distribution of species: Sudan, Somaliland, Asben, north to Southern Algeria, Libya and Egypt; Sinai, Southern Arabia; Persian Baluchistan and Afghanistan.

VULPES RUPPELLI RUPPELLI Schinz, 1825

1825. *Canis ruppelii* (sic) Schinz, Cuviers Thierreich, *4:* 508. Dongola, Sudan.
1826. *Canis famelicus* Cretzschmar, in Rüppell, Atlas zu d. Reise im nördl. Afrika, Saugeth. 15. Nubian Desert and Kordofan. Ranges north to Egypt (Flower).

Vulpes rüppelli zarudnyi Birula, 1912

1912. *Vulpes (Megalotis) famelicus zarudnyi* Birula, Ann. Mus. Zool. Sci. St. Pétersb. *17:* 270. Kala-i-bid, Prov. Makran (Sargad), Persian Baluchistan. Ranges into Afghanistan (B.M.).

Vulpes rüppelli caesia Thomas & Hinton, 1921

1921. *Vulpes rüppellii caesia* Thomas & Hinton, Nov. Zool. *28:* 5. Southern side Mt. Baguezan, Asben, Western Sahara. Ranges north to Ahaggar, Southern Algeria.

Vulpes rüppelli cyrenaica Festa, 1921

1921. *Vulpes cyrenaica* Festa, Boll. Mus. Zool. Anat. Comp. Univ. Torino, *36,* 740: 3. Near Benghazi, Cyrenaica, Libya.

Vulpes rüppelli sabaea Pocock, 1934

1934. *Vulpes rüppelli sabaea* Pocock, Ann. Mag. N.H. *14:* 636. Rub al Khali, Arabia.

Vulpes pallida group

Vulpes cana Blanford, 1877 Blanford's Fox

Approximate distribution of species: Kopet Dag, in South-Western Russian Turkestan; Afghanistan, North-Eastern Persia, Baluchistan.

Vulpes cana Blanford, 1877

1877. *Vulpes canus* Blanford, J. Asiat. Soc. Bengal, *46,* 2: 321. Gwadar, Baluchistan.
1907. *Vulpes cana* var. *nigricans* Shitkow, Zool. Anz. *32:* 448. Bokhara, Russian Turkestan.

Vulpes ferrilata group

Vulpes ferrilata Hodgson, 1842 Tibetan Sand Fox

Approximate distribution of species: Tibet and Nepal.

Vulpes ferrilata Hodgson, 1842

1842. *Vulpes ferrilatus* Hodgson, J. Asiat. Soc. Bengal, *11:* 278. Near Lhasa, Tibet.

Genus **FENNECUS** Desmarest, 1804

1804. *Fennecus* Desmarest, Dict. d'Hist. Nat. *24,* Tabl. méth. Mamm. 18. *Fennecus arabicus* Desmarest = *Canis zerda* Zimmermann.
1811. *Megalotis* Illiger, Prodr. Syst. Mamm. et Avium, 131. *Canis cerda* Gmelin = *Canis zerda* Zimmermann.

1 species: *Fennecus zerda,* page 231

Fennecus zerda Zimmermann, 1780 Fennec Fox

Approximate distribution of species: Morocco, Algeria, Libya, Egypt, thence to Sinai and Arabia, south to the Sudan and Asben.

Fennecus zerda Zimmermann, 1780

1780. *Canis zerda* Zimmermann, Geogr. Ges. *2:* 247. Sahara, and other parts of North Africa behind the Atlas.

1777. *Vulpes minimus saarensis* Skjöldebrand, K. Svenska Vet. Akad. Handl. Stockholm, *38:* 267. "This name if considered valid would supersede *Canis zerda*, but although the author states that he wishes to include the animal in the Linnean system, he gives a trinomial name" (Glover Allen). Algerian Sahara.

1788. *Canis cerdo* Gmelin, Linn. Syst. Nat. 13th ed. *1:* 75. Sahara.

1793. *Viverra aurita* Meyer, Zool. Entdeck. in Neu Holland u. Africa, 91. Biskra, Beni Mezzab and Weryleh, Algeria.

1804. *Fennecus arabicus* Desmarest, Dict. H.N. *24*, Tabl. méth. Mamm. 18. "Barbary, Nubia, Abyssinia."

1811. *Megalotis cerda* Illiger, Prodr. Syst. Mamm. 131.

1820. *Fennecus brucei* Desmarest, Encyclop. Méth. Mamm. 235. Libya, Tunis, Algeria, Sennaar.

1827. *Canis fennecus* Lesson, Manuel Mamm. 168.

1842. *Vulpes denhamii* Boitard, Le Jardin des Plantes, 213. "Interior of Africa."

Genus **NYCTEREUTES** Temminck, 1839

1839. *Nyctereutes* Temminck, in Van der Hoevens Tijdschr. Nat. Ges. Phys. *5:* 285. *Nyctereutes viverrinus* Temminck.

1 species: *Nyctereutes procyonoides*, page 232

Nyctereutes procyonoides Gray, 1834 Raccoon-Dog

Approximate distribution of species: Amur and Ussuri region of Eastern Siberia; Japan, Manchuria, states of Shansi, Szechuan, Yunnan, south-eastwards to Fukien and district, in China; Tonkin, in Northern Indo-China.

Nyctereutes procyonoides procyonoides Gray, 1834

1834. *Canis procyonoides* Gray, Illustr. Ind. Zool. *2:* pl. 1. Vicinity of Canton, Southern China (see G. Allen, 1938, Mamm. China & Mongolia, *1:* 346).

1904. *Nyctereutes sinensis* Brass, Nutzbare Tiere Ostasiens, 22. Yangtze Valley, China.

1907. *Nyctereutes stegmanni* Matschie, Wiss. Ergebn. Filchners Exped. to China, *10*, 1: 175, 180. Hsing-an-fu, Chinkiang, Kiangsu, Southern East China.

Range: Chinese range of the species, except Yunnan. Tonkin, in Indo-China.

Nyctereutes procyonoides viverrinus Temminck, 1844

1844. *Nyctereutes viverrinus* Temminck, Siebolds Fauna Japonica, Mamm. 40, pl. 8. Japan.

(?) 1904. *Nyctereutes albus* Beard, Scientific American, *91:* 287. "Based on a white specimen in the New York Zoological Park, said to be from Hokkaido, Japan." But listed as a valid race for Hokkaido by Kuroda, 1938, Mamm. Japan.

Range includes also Hondo, Shikoku, Kiushiu.

Nyctereutes procyonoides ussuriensis Matschie, 1907
1907. *Nyctereutes ussuriensis* Matschie, Wiss. Ergebn. Filchners Exped. to China, *10*, 1: 178. Near mouth of Ussuri River, Eastern Siberia.
1907. *Nyctereutes amurensis* Matschie, *loc. cit.* 179. Amur.

Nyctereutes procyonoides koreensis Mori, 1922
1922. *Nyctereutes koreensis* Mori, Ann. Mag. N.H. *10:* 607. Giseifu, near Seoul, Korea.

Nyctereutes procyonoides orestes Thomas, 1923
1923. *Nyctereutes procyonoides orestes* Thomas, Ann. Mag. N.H. *11:* 657. North-western flank Likiang Range, Yunnan, about 10,000–12,000 ft., China.

Genus **CUON** Hodgson, 1838

1838. *Cuon* Hodgson, Ann. Mag. N.H. *1:* 152. *Canis primaevus* Hodgson.
1839. *Chrysaeus* H. Smith, Jardine's Nat. Libr. Mamm. *25:* 167. *Canis dukhunensis* Sykes.
1888. *Cyon* Blanford, Fauna Brit. India, Mamm. *1:* 142. (Emendation of *Cuon.*)
1888. *Anurocyon* Heude, Mém. H.N. Emp. Chin. *2:* 102. *Anurocyon clamitans* Heude = *Canis lepturus* Heude.

Pocock recognized only one species in this genus, for which the earliest name is *C. alpinus* Pallas, 1811.

1 species: *Cuon alpinus*, page 233

Cuon alpinus Pallas, 1811 Dhole, Red Dog, or Indian Wild Dog

Approximate distribution of species: Eastern Russian Turkestan (Eastern Pamirs, Tianshan and Tarbagatai Mountains), Russian Altai, Southern Cisbaikal and Southern Transbaikal, Amur and Ussuri regions of Eastern Siberia; Chinese Turkestan, part, according to Ognev, probably Southern Tibet, Korea, Sakhalin; states of Szechuan, Yunnan, Fukien, in China; Peninsula of India, from Coorg and Nilgiri Hills northwards to Kashmir, thence to Nepal, Burma, Tenasserim; Indo-China, Malay States, Sumatra and Java.

Cuon alpinus alpinus Pallas, 1811
1811. *Canis alpinus* Pallas, Zoogr. Ross. Asiat. *1:* 34. Near Udskoi Ostrog, Amurland. Range includes Manchuria and Sakhalin.

Cuon alpinus dukhunensis Sykes, 1831
1831. *Canis dukhunensis* Sykes, P.Z.S. 100. Deccan, Peninsular India. Range: India, south of the Ganges.

Cuon alpinus primaevus Hodgson, 1833
1833. *Canis primaevus* Hodgson, Asiat. Res. *18*, 2: 221. Nepal.
1863. *Cuon grayiformis* Hodgson, in Gray, Cat. Hodgsons Coll. B.M. 2nd ed. 5. Sikkim.
Range: Kumaon, Nepal, Sikkim, Bhutan.

Note: Osgood (1932), On Indo-Chinese Mammals, *Field Mus. N.H. Zool. 18:* 193,

et seq., uses for the Wild Dogs of Indo-China the name *Cuon rutilans* Muller, 1839, *Temm. Verh. nat. ges. Ned. overz. bezitt. Zool.* 27, 51, which according to Chasen, 1940, *Handlist Malaysian Mamm.*, is a synonym of *Cuon alpinus javanicus* Desmarest, 1820, and came from Java. These Indo-Chinese Wild Dogs are now referred to *C. a. adustus* Pocock (below).

CUON ALPINUS LEPTURUS Heude, 1892

1892. *Cuon lepturus* Heude, Mém. H.N. Emp. Chin. *2*, 2 (footnote), 102. Poyang Lake, south of the Yangtze, Kiangsi, China.
1892. *Anurocyon clamitans* Heude, *loc. cit.* Taihu, near mouth of the Yangtze, China.

CUON ALPINUS HESPERIUS Afanasiev & Zolotarev, 1935

1935. *Cyon alpinus hesperius* Afanasiev & Zolotarev, Bull. Acad. Sci. U.S.S.R. 7: 427. Aksai district of Semiryechensk region, Eastern Russian Turkestan.
(?) 1936. *Cuon javanicus jason* Pocock, P.Z.S. 51. Altai Mountains.

CUON ALPINUS INFUSCUS Pocock, 1936

1936. *Cuon javanicus infuscus* Pocock, P.Z.S. 38, fig. 1a. Moulmein, Tenasserim.

CUON ALPINUS FUMOSUS Pocock, 1936

1936. *Cuon javanicus fumosus* Pocock, P.Z.S. 49. Western Szechuan, China.

CUON ALPINUS LANIGER Pocock, 1936

1936. *Cuon javanicus laniger* Pocock, P.Z.S. 50. Kashmir. Probably ranges to Lhasa, Southern Tibet.

CUON ALPINUS ADUSTUS Pocock, 1941

1941. *Cuon alpinus adustus* Pocock, Fauna Brit. India, *2:* 156. Upper Burma. Range: Upper Burma, Indo-China.

Genus **LYCAON** Brookes, 1827

1827. *Lycaon* Brookes, in Griffith Cuv. Anim. Kingd. *5:* 151. *Lycaon tricolor* Brookes = *Hyaena picta* Temminck.
1829. *Cynhyaena* F. Cuvier, Dict. des Sci. Nat. *59:* 454. *Hyaena picta* Temminck.
1842. *Hyenoides* Boitard, Le Jardin des Plantes, 215. *Hyaena picta* Temminck.

1 species: *Lycaon pictus*, page 234

Lycaon pictus Temminck, 1820 — African Hunting Dog

Approximate distribution of species: Africa, from South-West Africa and Kruger National Park (Transvaal), northwards to Somaliland and the Sudan, Lake Chad district, Dahomey, and (apparently) Southern Algeria.

(LYCAON PICTUS PICTUS Temminck, 1820. Extralimital)

1820. *Hyaena picta* Temminck, Ann. Gen. Sci. Phys. *3:* 54, pl. 35. Coast of Mozambique.

LYCAON PICTUS SHARICUS Thomas & Wroughton, 1907

1907. *Lycaon pictus sharicus* Thomas & Wroughton, Ann. Mag. N.H. *19:* 375. Mani, Lower Shari River, east of Lake Chad (French Congo).

1915. *Lycaon ebermaieri* Matschie, S.B. Ges. Nat. Fr. Berlin, 369. Lake Chad region. G. Allen, 1939, Checklist African Mammals, 191, quotes the race *L. p. sharicus* from Tanezrouft, Algeria.

FAMILY URSIDAE

Genera: *Helarctos*, page 241
Melursus, page 241
Selenarctos, page 239
Thalarctos, page 240
Ursus, page 235

See particularly Pocock, 1932, The Black and Brown Bears of Europe and Asia, *J. Bombay N.H. Soc. 35*, 1: 771; and *J. Bombay N.H. Soc. 36*, 2: 101. In this paper, a key to all genera listed above, except *Thalarctos*, will be found. Miller (1912, 285) gives the generic characters of *Thalarctos*. Simpson (1945, 225) follows Pocock in his classification of the bears, and we entirely agree with his remarks on the species and genera. It must be admitted, however, that *Selenarctos* might be considered a subgenus of *Ursus*, and it may be noted that Bobrinskii (1944) refers all Russian bears, including *Thalarctos*, to the genus *Ursus*, in which (p. 136) he lists three subgenera. Pocock (1941, 169) gives a short note on *Thalarctos* compared with the four British-Indian genera, and comparison of Miller's figures of skulls of *Thalarctos* and *Ursus* with Pocock's figures of the skulls of the other three genera enables *Thalarctos* to be quite easily distinguished by skull alone, apart from its somewhat unique external appearance. Each of the genera listed here contains one species only in the present region.

Genus **URSUS** Linnaeus, 1758

1758. *Ursus* Linnaeus, Syst. Nat. 10th ed. *1:* 47. *Ursus arctos* Linnaeus.

1864. *Euarctos* Gray, P.Z.S. 692. *Ursus americanus* Pallas. Valid as a subgenus.

1864. *Myrmarctos* Gray, P.Z.S. 694. *Myrmarctos eversmanni* Gray = *Ursus arctos* Linnaeus.

1898. *Ursarctos* Heude, Mém. H. N. Emp. Chin. *4*, 1: 17 (*yesoensis*).

1898. *Melanarctos* Heude, Mém. H.N. Emp. Chin. *4*, 1: 18. *Melanarctos cavifrons* Heude = *Ursus lasiotus* Gray.

1923. *Mylarctos* Lönnberg, P.Z.S. 91. *Ursus pruinosus* Blyth.

1 species in Eurasia:

Ursus arctos, page 236

Ursus arctos Linnaeus, 1758 Brown Bear

Approximate distribution of species: Sweden, Norway, Finland, Estonia, Poland, Czechoslovakia, Austria, Yugoslavia, Albania, Rumania, Bulgaria, Greece, Italy (Abruzzi and Trentino), France (Pyrenees and, doubtfully, in Forest of Vercors, (Drôme), Spain (Pyrenees and Asturias). Most of the U.S.S.R.; according to Bobrinskii, "whole of the forest zone, whence it penetrates in the summer far into the tundra, Karaginskii Island in Bering Sea, the Shantar Islands, Sakhalin. Mountains of Central Asia, all the mountainous parts of the Caucasus; does not occur in Crimea". Mongolia, Manchuria, Japan; Tibet, Kansu, probably Szechuan. Syria (extinct in Palestine), Persia, Asia Minor. Kashmir, Punjab. Also in North America.

Ursus arctos arctos Linnaeus, 1758

1758. *Ursus arctos* Linnaeus, Syst. Nat. 10th ed. *1:* 47. Sweden.
1772. *Ursus ursus* Boddaert, Kortbegrip van het zamenstel der Nat. *1:* 46. (*M.V.*) Renaming of *arctos*.
1788. *Ursus arctos niger* Gmelin, Syst. Nat. 13th ed. *1:* 100. Northern Europe.
1788. *Ursus arctos fuscus* Gmelin, *loc. cit.* Alps.
1788. *Ursus arctos albus* Gmelin, *loc. cit.* Locality unknown.
1792. *Ursus arctos griseus* Kerr, Anim. Kingd. 184. Germany.
1797. *Ursus arctos rufus* Borkhausen, Deutsche Fauna, *1:* 46. Swiss and Tirolean Alps.
1798. *Ursus badius* Schrank, Fauna Boica, *1:* 55. Forests on Bohemian boundary.
1808. *Ursus fuscus* Tiedemann, Zool. *1:* 374. Substitute for *arctos*; not of Gmelin, 1788.
1814. *Ursus alpinus* Fischer, Zoognosia, *3:* 161. ? Alps.
1820. *Ursus arctos major* Nilsson, Skand. Fauna, *1:* 112. Southern Scandinavia.
1820. *Ursus arctos minor* Nilsson, *loc. cit.* 123. Northernmost Scandinavia.
1827. *Ursus arctos brunneus* Billberg, Synop. Faunae Scandinaviae, 15. Northern Scandinavia.
1827. *Ursus arctos annulatus* Billberg, *loc. cit.* 15. Northern Scandinavia.
1827. *Ursus arctos argenteus* Billberg, *loc. cit.* 15. Northern Scandinavia.
1827. *Ursus arctos myrmephagus* Billberg, *loc. cit.* 16. Northern Scandinavia.
1828. *Ursus formicarius* Billberg, Synops. Faun. Scand. 2nd ed. 16. Renaming of *myrmephagus*.
1829. *Ursus pyrenaicus* Fischer, Synops. Mamm. 142. Asturias, Spain.
1829. *Ursus norvegicus* Fischer, *loc. cit.* Norway.
(? 1836. *Ursus falciger* Reichenbach, Regn. Anim. Icon. *1:* 32. Pyrenees. (*M.V.*) ("afterwards supposed to be an individual of '*U. ferox*' See Naturgesch. des In-und Auslands, Raubsäugeth. p. 299, 1852" as quoted by Miller, 1912 Cat. Mamm. W. Europe, 236. (*U. ferox* = *U. horribilis* Ord, from North America.)
1840. *Ursus cadaverinus* Eversmann, Bull. Soc. Imp. Nat. Moscow, 11. Renaming of *U. arctos*.
1840. *Ursus longirostris* Eversmann, *loc. cit.* Renaming of *formicarius*.
(? 1847. *Ursus curyrhinus* Nilsson, Skand. Fauna, 2nd ed. *1:* 212. ? Sweden. Type an individual raised in captivity.)
1855. *Ursus arctos aureus* Fitzinger, Wiss. pop. Nat. der Säugeth. *1:* 372. Eastern Russia.
1864. *Ursus arctos* var. (1) *normalis* Gray, P.Z.S. 682. (Renaming of *arctos*.)
1864. *Ursus arctos* sub-var. (a) *scandinavicus* Gray, P.Z.S. 682.
1864. *Ursus arctos* sub-var. (c) *rossicus* Gray, P.Z.S. 682, *nom. nud.*

1864. *Ursus arctos* sub-var. (f) *polonicus* Gray, P.Z.S. 682. Poland.
1864. *Ursus arctos* var. (2) *grandis* Gray, P.Z.S. 684. "North of Europe," a male purchased at Hull, living in the Zoological Gardens from 1852 to 1863.
1864. *Ursus arctos* var. (4) *stenorostris* Gray, P.Z.S. 685. Poland, based on Cuvier, 1823, Oss. Fossiles, *4:* 332, 2nd var.
1864. *Myrmarctos eversmanni* Gray, P.Z.S. 695. Norway.
(?) 1905. *Ursus formicarius* (Eversmann) Bieler, C.R. Sixième Congrès Internat. de Zool. Berne, 248. Switzerland.
(?) 1921. *Ursus arctos marsicanus* Altobello, Fauna Abruzzo e Molise, Mamm. 15. Abruzzo, Italy.
Range: European range of the species, eastwards as far as the Stanovoi Range, Siberia.

Ursus arctos collaris Cuvier & Geoffroy, 1824

1824. *Ursus collaris* Cuvier & Geoffroy, H.N. Mamm. pt. 42, pl. 212. Siberia.
1864. *Ursus arctos* var. *sibiricus* Gray, P.Z.S. 682. Siberia.
1924. *Ursus arctos jeniseensis* Ognev, Nature & Sport in Ukraine, *1*, 2: 110. River Ungut, taiga in mountains in surroundings of Krasnoiarsk, Yenessei Province, Siberia.

This name is not used by the Russian authors Ognev and Bobrinskii, but the name appears to be the second valid name in the Palaearctic for the species, and is retained by Pocock, 1932, *J. Bombay N.H. Soc. 35*, 4: 793.

Ursus arctos isabellinus Horsfield, 1826 Red Bear

1826. *Ursus isabellinus* Horsfield, Trans. Linn. Soc. Zool. *15:* 334. Mountains of Nepal.
1873. *Ursus leuconyx* Severtzov, Mem. Soc. Amis. Sci. Nat. Mosc. *8:* 79. Upper part of valley of River Naryn, Tianshan Mountains.
1924. *Ursus pamirensis* Ognev, Nature & Sport in Ukraine, *1*, 2: 111. Pamir Mountains.
Range: Tianshan, Pamirs, Afghanistan ? Waziristan, Kashmir, Punjab. Bobrinskii (1944) lists *leuconyx* as a valid form, but Pocock (1932, 1941) states it is the same as *isabellinus*, which has priority.

Ursus arctos syriacus Hemprich & Ehrenberg, 1828

1828. *Ursus syriacus* Hemprich & Ehrenberg, Symb. Phys. *1:* sig. a, pl. 1. Near village of Bischerre, Mt. Makmel, Lebanon.
1917. *Ursus schmitzi* Matschie, S.B. Ges. Nat. Fr. Berlin, 33. Mt. Hermon, Palestine.

In addition, Pocock appears to treat the following names as synonyms:

1851. *Ursus arctos* var. *meridionalis* Middendorff, Verh. Russ. Kais. Min. Ges. 80. Caucasus.
1913. *Ursus arctos lasistanicus* Satunin, Tr. Obshch. Chernomorsk poberezh'ya, *2:* 27. Black Sea coast.
1919. *Ursus arctos* var. *caucasicus* Smirnov, Bull. Mus. Cauc. *12:* 117. Pasanaur, southern slope of Central Caucasus mountains.
1919. *Ursus arctos arctos* natio *dinniki* Smirnov, Bull. Mus. Cauc. *12:* 122. Chatakh Borchalinsk subdistrict of Govt. of Tiflis, Caucasus.
1925. *Ursus arctos smirnovi* Lönnberg, Fauna och Flora, *1:* 28. Northern slopes of main chain of Caucasus.

URSUS ARCTOS SYRIACUS [*contd.*]

1925. *Ursus arctos persicus* Lönnberg, Fauna och Flora, *1:* 28. Mazanderan, Northern Persia.

Range: Syria, Asia Minor, Persia and the Caucasus. It should be noted that Bobrinskii lists two races of this species from the Caucasus, *syriacus* (South-Western Transcaucasia) and *caucasicus* (other parts of the Caucasus).

URSUS ARCTOS BERINGIANUS Middendorff, 1853

1853. *Ursus arctos* var. *beringiana* Middendorff, Sibir. Reise, *2*, 2: 4, pl. 1, figs. 1–6. Great Shantar Island, Sea of Okhotsk.

1855. *Ursus piscator* Pucheran, Rev. Mag. Zool. *7:* 392. Petropaulovski, Southern Kamtchatka.

(?) 1898. *Ursus mandchuricus* Heude, Mém. H.N. Nat. Emp. Chin. *4:* 23–24, pl. 7, figs. 1–1c. Near Vladivostock. Bobrinskii thinks that this should probably stand as a valid race, but Pocock synonymized it.

1924. *Ursus arctos kolymensis* Ognev, Nature & Sport in Ukraine, *1*, 2: 112. Saborzevo, River Kolyma, north-west of Sea of Okhotsk.

Range: Siberia, east of Stanovoi Range, particularly in Kamtchatka, Ussuri and Manchuria.

URSUS ARCTOS PRUINOSUS Blyth, 1854 Blue Bear

1854. *Ursus pruinosus* Blyth, J. Asiat. Soc. Bengal, *22:* 589. Lhasa, Tibet.

1883. *Ursus lagomyiarius* Przewalski, Third Journ. in Cent. Asia, 216. Kuku-Shili Range, 35° N., 92° E., Tibet.

Range: Tibet, Kansu.

URSUS ARCTOS LASIOTUS Gray, 1867

1867. *Ursus lasiotus* Gray, Ann. Mag. N.H. *20:* 301. Interior of Northern China.

1844. *Ursus ferox* Temminck, Fauna Japonica, 29, not of Rafinesque, 1817.

1897. *Ursus arctus yesoensis* Lydekker, P.Z.S. 422. Yeso (= Hokkaido), Japan.

1898. *Ursus melanarctos* Heude, Mém. H.N. Emp. Chin. *4:* 17. Yeso (= Hokkaido), Japan.

1901. *Melanarctos cavifrons* Heude, Mém. H.N. Emp. Chin. *5*, 1: 1. Tci-tci-tar (Tsitsihar), North-Western Manchuria.

(?) 1924. *Ursus arctos baikalensis* Ognev, Nature & Sport in Ukraine, *1*, 2: 112. Province of Irkutsk, near Lake Baikal, Eastern Siberia.

Range: Mongolia, Manchuria, Hokkaido and Kurile Islands, Korea.

The following races may be of doubtful status:

Ursus arctos crowtheri Schinz, 1844, Synops. Mammalium, *1:* 302 (based upon the "Bear of Mount Atlas" of Blyth, 1841, P.Z.S. 65. "Foot of the Tetuan mountains, about twenty-five miles from that of the Atlas." Doubts have been thrown on the existence of this bear, but though it is now extinct it almost certainly did exist in 1844 (see Harper, 1945, Extinct and Vanishing Mammals of the Old World, 230)).

Ursus arctos shanorum Thomas, 1906, Abstr. P.Z.S. 17. Said to be from the Shan States, Upper Burma, where the species probably does not occur. See Pocock (1941, 185).

Ursus arctos bosniensis Bolkay, 1925, Nov. Mus. Sarajevo, *1:* 8. Bosnia, Yugoslavia.

Genus **SELENARCTOS** Heude, 1901

1901. *Selenarctos* Heude, Mém. H.N. Emp. Chin. *5:* 2. *Ursus thibetanus* Cuvier.
1917. *Arcticonus* Pocock, Ann. Mag. N.H. *20:* 129. *Ursus thibetanus* Cuvier.
1938. *Euarctos* G. Allen, Mamm. China & Mongolia, *1:* 330 (in part); not *Euarctos* Gray, 1864.

1 species: *Selenarctos thibetanus*, page 239

Selenarctos thibetanus G. Cuvier, 1823 — Asiatic Black Bear

Approximate distribution of species: Amur and Ussuri regions of far east of Siberia; Japan, Manchuria, Formosa; most of China, westwards to Kansu and Szechuan, south to Fukien and Hainan; Indo-China, Siam; from Burma and Assam westwards to Nepal, Kashmir and Baluchistan; Afghanistan (Bobrinskii).

Selenarctos thibetanus thibetanus G. Cuvier, 1823

1823. *Ursus thibetanus* G. Cuvier, Ossements Foss. *4:* 325. Sylhet, Assam.
1841. *Ursus torquatus* Wagner, in Schreb. Säugeth. Suppl. *2:* 144. Renaming of *thibetanus*.
1876. *Ursus* sp. (? *Melursus labiatus*) Blanford, E. Persia, 47. Not of Blainville, 1817.

Range: from Nepal eastwards through Assam, Burma, and Siam to Annam.

Selenarctos thibetanus japonicus Schlegel, 1857

1857. *Ursus japonicus* Schlegel, Handl. Dierkunde, *1:* 42. (Assumed to be) Japan.
1897. *Ursus rexi* Matschie, S.B. Ges. Nat. Fr. Berlin, 72. Japan.

Range: Hondo, Kiushu, ? Shikoku.

Selenarctos thibetanus formosanus Swinhoe, 1864

1864. *Ursus formosanus* Swinhoe, P.Z.S. 380. Formosa.
(?) 1922. *Selenarctos melli* Matschie, Arch. Nat. *88*, 10: 34. Hainan.

Pocock thought this was either a synonym of *formosanus* or the typical race. G. Allen (1938) listed it as a valid race from Fukien and Hainan.

Selenarctos thibetanus gedrosianus Blanford, 1877

1877. *Ursus gedrosianus* Blanford, Proc. Asiat. Soc. Bengal, 204. Tump, 70 miles north of Gwadár, on the Mekran coast, Baluchistan.

Selenarctos thibetanus ussuricus Heude, 1901

1901. *Selenarctos ussuricus* Heude, Mém. H.N. Emp. Chin. *5*, 1: 2, pl. ii, fig. 10. Ussuri region, Eastern Siberia.
1928. *Selenarctos thibetanus wulsini* Howell, Proc. Biol. Soc. Washington, *41:* 115. Eastern Tombs, Chihli, North-Eastern China.

Range: Northern China, Manchuria, Amurland and Ussuri, Korea.

Selenarctos thibetanus mupinensis Heude, 1901

1901. *Selenarctos mupinensis* Heude, Mém. H.N. Emp. Chin. *5*, 1: 2, pl. ii, figs. 1, 2, 9. Moupin, Szechuan, China.
1901. *Selenarctos leuconyx* Heude, *loc. cit.*, figs. 3, 4, 8. Taipei Shan, South-Western Shensi, China.

SELENARCTOS THIBETANUS MUPINENSIS [*contd.*]

1909. *Ursus torquatus macneilli* Lydekker, P.Z.S. 609. Tatsienlu, Szechuan, China.

1920. *Ursus clarki* Sowerby, J. Mamm. *1:* 226. New name for *leuconyx* Heude. A synonym of *thibetanus* according to G. Allen (1938), but a valid race according to Pocock.

Range includes Shensi, Szechuan and Hupeh, China.

SELENARCTOS THIBETANUS LANIGER Pocock, 1932

1932. *Selenarctos thibetanus laniger* Pocock, J. Bombay N.H. Soc. *26:* 115. Aru, Upper Lidder Valley, Kashmir.

(?) 1864. *Ursus torquatus* var. *arboreus* Gray, P.Z.S. 688. Darjeeling.

Range: Kashmir and Punjab.

Genus **THALARCTOS** Gray, 1825

1825. *Thalarctos* Gray, Ann. Philosophy, N.S. *10:* 62, July 1825. *Thalarctos polaris* Gray = *Ursus maritimus* Phipps.

1825. *Thalassarctos* Gray, Ann. Philosophy, N.S. *10:* 339. November 1825.

1896. *Thalassiarchus* Kobelt, Bericht Senckenberg. naturf. Ges. Frankfurt am Main, 93. (Substitute for *Thalarctos*.)

1 species: *Thalarctos maritimus*, page 240

Thalarctos maritimus Phipps, 1774 — Polar Bear

Approximate distribution of species: Arctic regions of Europe, Asia and North America. "South on floating ice occasionally to the northern coast of Norway" (Miller). In U.S.S.R., "only occurs by chance on European coasts. Does not penetrate far on to the mainland. Numerous on sea coasts of the Kara, Laptev, Eastern Siberian Seas and Chukotskaya Seas, and on Dixon Island, the Novosibirskie Islands, Medvezhie Islands and Wrangel Island. It is rare on the west coast of the south island of Novaya Zemlya, and common on the northern island and in Spitzbergen. On Vaigach and Kolguev Islands it is very rare and occurs only in winter. Cases are known of its having been carried on icefloes in the winter to the Murman coast and Kanin Peninsula. In Bering Sea it is already rare and on the Anadyr coast only occurs in exceptional cases. It is not known to occur in Kamtchatka, but has several times been carried on icefloes to Sakhalin and was once observed in the north of the Sea of Okhotsk (Tui Bay)". According to Kuroda's list (1938) has been recorded from Japan (Kuriles, Hokkaido, ? Hondo).

THALARCTOS MARITIMUS MARITIMUS Phipps, 1774

1774. *Ursus maritimus* Phipps, Voyage toward North Pole, 185. Spitzbergen.

(?) 1776. *Ursus marinus* Pallas, Reise durch verschiedene Provinzen des Russ. Reichs, *3:* 691. Arctic Ocean, Siberia.

1792. *Ursus polaris* Shaw, Mus. Leverianum, *1:* 7. Renaming of *marinus*.

? 1908. *Thalassarctos jenaensis* Knottnerus-Mayer, S.B. Ges. Nat. Fr. Berlin, 184. Jena Island, Spitzbergen.

? 1908. *Thalassarctos spitzbergensis* Knottnerus-Mayer, *loc. cit.* Seven Island, Spitzbergen.

Genus **HELARCTOS** Horsfield, 1825

1825. *Helarctos* Horsfield, J. Zool. *2:* 221, 233. *Ursus malayanus* Raffles.

1 species: *Helarctos malayanus*, page 241

Helarctos malayanus Raffles, 1821 — Malayan Sun Bear

Approximate distribution of species: Burma, Indo-China, Siam, Malay Peninsula, Sumatra, Borneo. Possibly, but not certainly, from Szechuan or some adjacent region of Southern China.

Helarctos malayanus malayanus Raffles, 1821

1821. *Ursus malayanus* Raffles, Trans. Linn. Soc. London, *13*:254. Bencoolen, Sumatra.
1901. *Helarctos annamiticus* Heude, Mém. H.N. Emp. Chin. *5*, *1:* 1, pl. 1, figs. 1–2. Annam, Indo-China.
1906. *Ursus malayanus wardi* Lydekker, P.Z.S. 999. Thought to be from Tibet (or Szechuan or Yunnan, G. Allen).

Range: as in the species, except Borneo.

Genus **MELURSUS** Meyer, 1793

1793. *Melursus* Meyer, Zool. Entdeck. 155. *Bradypus ursinus* Shaw.
1809. *Arceus* Goldfüss, Verh. Nat. Säug. 301. *Bradypus ursinus* Shaw.
1811. *Prochilus* Illiger, Prodr. Syst. Mamm. 109. *Bradypus ursinus* Shaw.
1814. *Chondrorhynchus* Fischer, Zoogr. *3:* 142. *Bradypus ursinus* Shaw.

1 species: *Melursus ursinus*, page 241

Melursus ursinus Shaw, 1791 — Sloth Bear

Approximate distribution of species: Ceylon, Southern Peninsula of India, northwards to Central Provinces, Bihar, Bengal and Assam. ? Darjeeling.

Melursus ursinus ursinus Shaw, 1791

1791. *Bradypus ursinus* Shaw, Nat. Misc. *2* (unpaged), pls. 58–59. Patna, on the Ganges, Bengal.
1793. *Melursus lybius* Meyer, Zool. Entdeckung. 156. "Africa interior."
1809. *Arceus niger* Goldfüss, Verh. Nat. Säug. 301 (*teste* Palmer).
1817. *Ursus labiatus* Blainville, Bull. Soc. Philom. 74.
1820. *Ursus longirostris* Tiedemann, Abhandl. Bar. Faulthier, 11.

Range: as above, Ceylon excluded.

Melursus ursinus inornatus Pucheran, 1855

1855. *Melursus inornatus* Pucheran, Rev. Mag. Zool. *7:* 392. Ceylon.

FAMILY PROCYONIDAE

Genera: *Ailuropoda*, page 242
Ailurus, page 242

Simpson (1945, 226) refers the Asiatic Pandas to this (principally American) family, as a subfamily, the Ailurinae. Pocock referred the two to two distinct families, Ailuridae and Ailuropodidae. G. Allen (1938) referred *Ailurus* to the Procyonidae, but retained the family Ailuropodidae. While the differences between the two genera seem very wide, we follow Simpson, preferring his classification to the very split one offered by Pocock for the Raccoons and their allies.

Subfamily Ailurinae

Genus **AILURUS** Cuvier, 1825

1825. *Ailurus* F. Cuvier, in E. Geoffroy & Cuvier, H.N. Mamm. *3* (50), 3. *Ailurus fulgens* Cuvier.
1841. *Arctaelurus* Gloger, Gemein. Hand. Nat. *1:* xxviii. *A. fulgens.*
1846. *Aelurus* Agassiz, Nomenclator Zool. index, Univ. 9. Emend. pro *Ailurus* Cuvier.

1 species: *Ailurus fulgens*, page 242

Ailurus fulgens F. Cuvier, 1825 — Red Panda

Approximate distribution of species: Yunnan and Szechuan, in China; Northern Burma, Sikkim and Nepal.

Ailurus fulgens fulgens F. Cuvier, 1825

1825. *Ailurus fulgens* Cuvier, in Geoffroy & Cuvier, H.N. Mamm. *3* (50): Panda, 3. Locality unknown ("East Indies").
1847. *Ailurus ochraceus* Hodgson, J. Asiat. Soc. Bengal, *16:* 1118. "Sub Himalayas," from 7,000 to 13,000 ft.

Range: Nepal and Sikkim.

Ailurus fulgens styani Thomas, 1902

1902. *Ailurus fulgens styani* Thomas, Ann. Mag. N.H. *10:* 251. Yangtiupa, North-Western Szechuan, China.
? 1874. *Ailurus refulgens* Milne-Edwards, Rech. Mamm. 380.

Range: Szechuan, Yunnan, Northern Burma.

Genus **AILUROPODA** Milne-Edwards, 1870

1870. *Ailuropoda* Milne-Edwards, Ann. Sci. Nat. Zool. *13*, art. 10: 1. *Ursus melanoleucus* David.
1870. *Pandarctos* Gervais, Nouv. Arch. Mus. H.N. Paris, *6:* 161. *Ursus melanoleucus* David.
1871. *Ailuropus* Milne-Edwards, in David, Nouv. Arch. Mus. H.N. Paris, *7*, Bull. 92.

1 species: *Ailuropoda melanoleuca*, page 243

Ailuropoda melanoleuca David, 1869 Giant Panda

Approximate distribution of species: State of Szechuan, in China.

AILUROPODA MELANOLEUCA David, 1869

1869. *Ursus melanoleucus* David, Nouv. Arch. Mus. H.N. Paris, *5*, Bull. 13. Moupin, Szechuan, China.

FAMILY MUSTELIDAE

Genera: *Aonyx*, page 278
Arctonyx, page 274
Enhydra, page 279
Gulo, page 250
Lutra, page 275
Martes, page 244
Meles, page 271
Mellivora, page 268
Melogale, page 269
Mustela, page 251
Poecilictis, page 267
Vormela, page 266

Pocock divided this large family into a bewildering number of subfamilies, which are reduced by Simpson (1945) so far as living Palaearctic and Indian genera are concerned, to four. These are the Mustelinae, the Melinae, and the Lutrinae, which are recognized by virtually all authors, and the Mellivorinae which does not seem strongly differentiated from Mustelinae. Simpson's arrangement is simpler than that of Pocock, and is followed here. Of the genera listed above, the characters of eight are dealt with by Pocock in his work on the mammals of British India (1941). Besides this he shows (p. 423) the distinguishing characters of *Meles* compared with its nearest ally *Arctonyx*. *Meles* was also dealt with at some length by Miller, 1912, *Cat. Mamm. Western Europe*, 341, and in that work the characters of *Gulo* are given (p. 433). Miller referred *Gulo* to a distinct subfamily, whereas Pocock thought it was nearest the Martens. For the characters of *Enhydra* see Pocock, 1921, *P.Z.S.* 803–837, "On the External Characters and Classification of the Mustelidae". In this work, *Enhydra* is given subfamily rank under the name "Lataxinae" (p. 830). On p. 835 of the same work, the characters of the African *Ictonyx* group of genera, to which *Poecilictis* belongs, are given; this group is also given subfamily rank. There has been an increasing tendency towards genus-splitting in this family during recent years. Even Simpson lists four more genera than are here admitted, and Pocock about the same number, but their extra genera do not agree. We retain here genera which are universally admitted, and prefer to regard the possible extra genera as subgenera. The only genus here retained which is not of very long standing is *Poecilictis*, which used to be referred to the earlier-named *Ictonyx* Kaup, 1835, but which seems a distinct form with peculiarly enlarged bullae which distinguish it from *Ictonyx* and in all probability from all the other Palaearctic genera belonging to the Mustelinae as here understood. Pocock referred *Martes* to a special subfamily, which following Simpson is here referred to the Mustelinae. He also made a special subfamily for *Helictis* (which is antedated by *Melogale* and here referred to that genus), which Simpson placed in the Melinae.

Subfamily Mustelinae

Genus **MARTES** Pinel, 1792

1775. *Martes* Frisch, Natur-system der vierfüss. Thiere, 11 (see page 2).
1792. *Martes* Pinel, Actes Soc. d'H.N. Paris, *1:* 55. *Martes domestica* Pinel = *Mustela foina* Erxleben.
1829. *Zibellina* Kaup, Entw. Gesch. u. Nat. Syst. Europ. Thierw. *1:* 31, 34. *Mustela zibellina* Linnaeus.
1865. *Charronia* Gray, P.Z.S. 108. *Mustela flavigula* Boddaert. Valid as a subgenus.
1928. *Lamprogale* Ognev, Mem. Soc. Amis. Sci. Nat. Mosc. No. 2, Zool. 26, 30. Proposed to replace *Charronia* on the grounds that it is preoccupied by an earlier name *Charonia*, for a genus of mollusc.

This genus was formerly known as *Mustela* by many authors, as, for instance, Blanford, 1891. What is now known as *Mustela* was called by older authors *Putorius*.

6 species in the area covered by this list:

Martes flavigula, page 249
Martes foina, page 246
Martes gwatkinsi, page 250
Martes martes, page 245
Martes melampus, page 247
Martes zibellina, page 248

The species *flavigula* and *gwatkinsi* belong to the subgenus *Charronia*, which is fully compared with *Martes* by Pocock (1941, 319, 326). The characters of the two species are also dealt with by Pocock. Miller (1912) compares the characters of *martes* and *foina*, which apparently are not always very easily distinguishable. A translation in our possession of part of Ognev's work on the mammals of the U.S.S.R. contrasts *M. zibellina* with *M. martes* and *M. foina*, and states that in *zibellina* there are 15–16 tail vertebrae, whereas in the other two species there are 20 and more; also that in *zibellina* the bullae are differently shaped, and set closer together, as may be seen from Bobrinskii's figures of the three species' skulls (1944, 118). Bobrinskii states that *zibellina* has the tail usually less than half head and body length, the light patch on the throat is often absent, and the top of the head is usually lighter than the back, whereas in *martes* and *foina* the tail is usually more than half the head and body length, the light spot on the throat is well developed, and the top of the head is the same colour as the back. In the London material, however, it must be noted that *M. martes* skins have the tail averaging only 49 per cent. of the head and body. There remains for discussion the Japanese species *M. melampus*. In the London material, this has the tail on average about 44–47 per cent. of head and body length (resembling *zibellina*, therefore, in rather short tail); a white throat patch seems fairly constant, and, at least in winter, the head tends to be paler than the back, all characters reminiscent of *zibellina* except the throat patch. But the bullae seem to be definitely of the *martes-foina* type, and do not seem to resemble those of *zibellina*. The forelimbs are clearly contrasted blackish, more so than in our *zibellina* skins. Therefore the conclusion has

been reached that *melampus* is an isolated and valid species, partly combining the characters of the other two groups. So far as colour is concerned it in no way resembles the subgenus *Charronia* as that is defined by Pocock. But it must be noted that not all our skins of *melampus* bear measurements.

Subgenus *MARTES* Pinel, 1792

Martes martes Linnaeus, 1758 Pine Marten

Approximate distribution of species: British Isles, Ireland included; Norway, Sweden, Denmark, France, Belgium, Holland, Germany, Switzerland, Italy, Northern Spain, Balearic Islands, Sardinia, Bohemia, Poland, to Russia, from White Sea to Caucasus, and eastwards into Western Siberia, roughly to lower Ob and lower Irtish Rivers. British Museum localities also include Sumela (Asia Minor) and Astrabad (Persia).

Martes martes martes Linnaeus, 1758

1758. *Mustela martes* Linnaeus, Syst. Nat. 10th ed. *1:* 46. Upsala, Sweden.
1816. *Mustela sylvestris* Oken, Lehrb. Nat. *3*, 2: 1029. Renaming of *martes*.
1820. *Martes sylvatica* Nilsson, Skand. Fauna. Dagg. Djur. *1:* 41. Renaming of *martes*.
1827. *Martes vulgaris* Griffith, Cuvier's Anim. Kingd. *5:* 123. Renaming of *martes*.
1865. *Martes abietum* Gray, P.Z.S. 104.

Range: Europe, north of the Mediterranean; Russia, as far as the White Sea and a line from Kiev to Vitebsk.

Martes martes latinorum Barrett-Hamilton, 1904

1904. *Mustela martes latinorum* Barrett-Hamilton, Ann. Mag. N.H. *13:* 389. Nurri Mountains, Sardinia. Range: Italy, Sardinia, Balearic Islands.

Martes martes notialis Cavazza, 1912

1912. *M(ustela) martes* var. *notialis* Cavazza, Ann. Mus. Civ. Stor. Nat. Genova, 3A, *5* (45): 181. South of Abruzzi, Southern Italy.

Martes martes lorenzi Ognev, 1926

1926. *Martes martes lorenzi* Ognev, Bull. Sci. Inst. Expl. Caucas. *1:* 47. Storojevaia, Kuban district, Caucasus.

Martes martes ruthena Ognev, 1926

1926. *Martes martes ruthena* Ognev, Bull. Sci. Inst. Expl. Caucasus, *1:* 49, 56. Dmitrovsk subdistrict, Moscow Govt., Russia. Range: Central regions of European Russia.

Martes martes borealis "Kuznetzov, 1941," Bobrinskii, 1944

1944. *M(artes) m(artes) borealis* Bobrinskii, Mamm. U.S.S.R. 121. Not of Radde, 1862. Northern areas of European Russia, excluding Kola Peninsula.

MARTES MARTES URALENSIS "Kuznetzov, 1941," Bobrinskii, 1944

1944. *M(artes) m(artes) uralensis* Bobrinskii, Mamm. U.S.S.R. 121. Whole area of the Ural Range.

We are unable to trace the original reference to the last two named forms.

Martes foina Erxleben, 1777 Beech Marten, or Stone Marten

Approximate distribution of species: Europe, including Spain, Italy, Bosnia, France, Belgium, Holland, Germany, Denmark, Switzerland, Crete, Poland, Finland (Ognev), Russia (Ukraine, Crimea, Caucasus, Transcaucasia (part) and Western Russia, according to Bobrinskii); Russian Turkestan (mountain areas), northwards to the Altai; Asia Minor, Persia, Afghanistan, Syria and Palestine; Baluchistan, Kashmir, Punjab; Chinese Turkestan, Mongolia, Manchuria (Bobrinskii), Tibet. Possibly parts Northern China. Perhaps to Sikkim.

MARTES FOINA FOINA Erxleben, 1777

1777. *Mustela foina* Erxleben, Syst. Regn. Anim. *1:* 458. Germany.
1792. *Martes domestica* Pinel, Actes Soc. H.N. Paris, *1:* 55. France.
1801. *Mustela foina alba* Bechstein, Gemeinn. Nat. Deutschlands, 2nd ed. *1:* 759. Thuringia, Germany.
1869. *Mustela martes* var. *fagorum* Fatio, Faune Vert. Suisse, *1:* 318.

Range: Europe, as above, except Southern Spain; probably eastwards into Russia.

MARTES (?) FOINA TOUFOEUS Hodgson, 1842

1842. *Mustela? toufoeus* Hodgson, J. Asiat. Soc. Bengal, *11:* 281. ? Lhasa, Tibet. Despite Pocock's contention that this is allied to *M. melampus*, it looks much more like *M. foina*. Its range is adjacent to that of *foina*, very far from *melampus*. From notes left by him, Chaworth-Musters evidently intended to treat it as *foina*. See also Pocock (1941, 322, footnote). We cannot trace that the form "*kansuensis*" noted by him on this page was ever described.

MARTES FOINA INTERMEDIA Severtzov, 1873

1873. *Mustela intermedia* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscow, *8*, 2: 61. 1876, Ann. Mag. N.H. *18:* 45. Basin of the Chu, Tallas, and Naryn, from 4,000 to 9,000 ft., Eastern Turkestan.
1879. *Martes leucolaćnaea* Blanford, Second Yarkand Miss. Mamm. 26. Yarkand, Chinese Turkestan.
1914. *Martes foina altaica* Satunin, Conspectus Mamm. Ross. *1:* 111. Altai.
1919. *Martes toufoeus* Wroughton, J. Bombay N.H. Soc. *26:* 343. Not of Hodgson, 1842.

Range: Russian and Chinese Turkestan, Tianshan, Afghanistan, Baluchistan, Western Persia, Kashmir.

MARTES FOINA MEDITERRANEA Barrett-Hamilton, 1898

1898. *Mustela mediterranea* Barrett-Hamilton, Ann. Mag. N.H. *1:* 442. Sierra de Jerez, Cadiz, Spain.

MARTES FOINA SYRIACA Nehring, 1902

1902. *Mustela foina syriaca* Nehring, S.B. Ges. Nat. Fr. Berlin, 145. Wadi Syr (which runs into Wadi Kefren, a tributary of lower Jordan), Syria.

MARTES FOINA BUNITES Bate, 1906

1906. *Mustela foina bunites* Bate, P.Z.S. *1905, 2:* 318. Kontopalo, Kania, Crete.

MARTES FOINA NEHRINGI Satunin, 1906

1906. *Mustela foina nehringi* Satunin, Mitt. Kauk. Mus. Tiflis, *2:* 120, 292. Tiflis, Transcaucasia.

MARTES FOINA BOSNIACA Brass, 1911

1911. *Martes foina bosniaca* Brass, Aus der Reiche der Pelze, 468 (spelt "*bosnia*" in index, p. xiii). Bosnia, Yugoslavia.

MARTES FOINA MILLERI Festa, 1914

1914. *Martes foina milleri* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *29,* 686: 7. Aghios Isidoros, Island of Rhodes, Eastern Mediterranean.

MARTES FOINA ROSANOWI Martino, 1917

1917. *Martes rosanowi* Martino, Bull. Soc. Nat. Crimeé, *7:* 1. (Reprint only seen.) North-western slope of Chatyr dag Mountains, Crimea, Southern Russia.

MARTES FOINA KOZLOVI Ognev, 1931

1931. *Martes foina kozlovi* Ognev, Mamm. E. Europe, N. Asia, *2:* 631. Kam (valley of River Mekong), Eastern Tibet.

Martes melampus Wagner, 1841 Japanese Marten

Approximate distribution of species: Japan (Hondo, Shikoku, Kiushiu, Tsushima) and Korea.

MARTES MELAMPUS MELAMPUS Wagner, 1841

1841. *Mustela melampus* Wagner, Schreb. Säugeth. Suppl. *2:* 229. Japan.
1865. *Martes japonica* Gray, P.Z.S. 104. Japan.
1865. *Martes melanopus* Gray, P.Z.S. 105.
1905. *Mustela melampus bedfordi* Thomas, Abstr. P.Z.S. 10, P.Z.S. *2:* 183. Washikaguchi, Nara district, east of Osaka, Southern Hondo, Japan.

MARTES MELAMPUS TSUENSIS Thomas, 1897

1897. *Mustela melampus tsuensis* Thomas, Ann. Mag. N.H. *19:* 161. Kamoze, Tsushima Islands, Japan.

MARTES MELAMPUS COREENSIS Kuroda & Mori, 1923

1923. *Martes melampus coreensis* Kuroda & Mori, J. Mamm. *4:* 27. Tenan, Southern Chusei district, Korea.

Martes zibellina Linnaeus, 1758 Sable

Approximate distribution of species: from the Pechora River and Ural Mountains, eastwards intermittently through Siberia to Kamtchatka, Sakhalin and the Ussuri region, south to the Altai Mountains, north to the Arctic Circle, and somewhat beyond in Middle Siberia. Manchuria, Mongolia and Japan. (Now only surviving in individual isolated areas, Bobrinskii.)

Martes zibellina zibellina Linnaeus, 1758

1758. *Mustela zibellina* Linnaeus, Syst. Nat. 10th ed. *1:* 46. Surroundings of Tobolsk, Tomsk Govt., Siberia (Ognev).
1855. *Mustela zibellina* var. *asiatica* Brandt, Mem. Phys. Nat. Acad. Sci. St. Pétersb. *7:* 6, pl. 1.
1855. *Mustela zibellina* var. *alba* Brandt, *loc. cit. 7:* 14, pl. 2, fig. 5.
1855. *Mustela zibellina* var. *fusco-flavescens* Brandt, *loc. cit.* pl. 2, fig. 6.
1855. *Mustela zibellina* var. *ochracea* or *ferruginea* Brandt, *loc. cit.* pl. 3, fig. 8.
1855. *Mustela zibellina* var. *maculata* Brandt, *loc. cit.* pl. 3, fig. 9.
1855. *Mustela zibellina* var. *rupestris* Brandt, *loc. cit.* pl. 2.
1855. *Mustela zibellina* var. *sylvestris* Brandt, *loc. cit.* pl. 2.
Range: Pechora basin, Northern Urals, Ob plain.

Martes zibellina brachyura Temminck, 1844

1844. *Mustela brachyura* Temminck, Siebolds Faun. Japon. Mamm. 33. Japan. (Yeso = Hokkaido and the Kuriles.)

Martes zibellina kamtshadalica Birula, 1918

1918. *Mustela zibellina* subsp. *kamtshadalica* Birula, C.R. Mus. Zool. Acad. Sci. Petrogr. 82. (N.T. Reference according to Ognev.) Kamtchatka.
(?) 1922. *Mustela zibellina* var. *kamtschatica* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.*

Martes zibellina princeps Birula, 1922

1922. *Mustela zibellina princeps* Birula, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *22:* 8. Bargusin Mountains, Transbaikalia.
(?) 1922. *Mustela zibellina* var. *baicalensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.*

Martes zibellina yeniseensis Ognev, 1925

1925. *Martes zibellina yeniseensis* Ognev, J. Mamm. *6:* 277. Forest on plain along Yenesei River, Krasnoiarsk district, Eastern Siberia. Range: Taiga between the Angarra and the Sayan foothills (Bobrinskii).

Martes zibellina sajanensis Ognev, 1925

1925. *Martes zibellina sajanensis* Ognev, J. Mamm. *6:* 278. Orsyba River, northern part of Sayan Mountains, Middle Siberia.

Martes zibellina sahalinensis Ognev, 1925

1925. *Martes zibellina sahalinensis* Ognev, J. Mamm. *6:* 279. Wedernikovo, Sakhalin Island.

Martes zibellina hamgyenensis Kishida, 1927

1927. *Martes zibellina coreensis* Kishida, Chôju Chôsahôkoku, *4:* 130. Korea. Not of Kuroda & Mori, 1923. (*N.V.*)
1927. *Martes zibellina hamgyenensis* Kishida, Dobuts Zasshi. *39:* 509 (*N.V.*)
1931. *Martes zibellina hangiengensis* Kishida & Mori, *op. cit. 43:* 380, *nom. nud.* (*N.V.*) These references are from Kuroda.

Martes zibellina tungusensis "Kuznetzov, 1941," Bobrinskii, 1944

1944. *M(artes) z(ibellina) tungusensis* Bobrinskii, Mamm. U.S.S.R. 120. Basins of the Nizhnaya and Podkamennaya Tungusha (Middle Siberia).

Martes zibellina arsenjevi "Kuznetzov, 1941," Bobrinskii, 1944

1944. *M(artes) z(ibellina) arsenjevi* Bobrinskii, Mamm. U.S.S.R. 120. Ussuri basin, Eastern Siberia.

Martes zibellina schantarica "Kuznetzov, 1941," Bobrinskii, 1944

1944. *M(artes) z(ibellina) schantaricus* Bobrinskii, Mamm. U.S.S.R. 120. Shantar Islands, Lower Amur, Eastern Siberia.
(?) 1922. *Mustela zibellina* var. *amurensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.*

We are unable to trace the original reference to the last three listed races, which are without description in Bobrinskii, 1944.

Subgenus *CHARRONIA* Gray, 1865 (*Lamprogale* Ognev, 1928)

Martes flavigula Boddaert, 1785 Yellow-throated Marten

Approximate distribution of species: Amur and Ussuri regions of Eastern Siberia; Korea, Manchuria, throughout the principal states of China (Chihli, perhaps, excepted), Tibet, Formosa; Burma, Assam, thence westwards to Kashmir and North-West Frontier; Indo-China, Siam, Malay States, Sumatra, Java and Borneo.

Martes flavigula flavigula Boddaert, 1785

1785. *Mustela flavigula* Boddaert, Elench. Anim. 88. Locality unknown, traditionally fixed as Nepal (Pocock).
1792. *Mustela melina* Kerr, Anim. Kingd. 183. Locality unknown.
1800. *Viverra quadricolor* Shaw, Gen. Zool. Mamm. *1*, 2: 429. Locality unknown.
1800. *Mustela leucotis* Bechstein, Uebers. vierf. Thiere, *2:* 375. Locality unknown.
1828. *Mustela hardwickei* Horsfield, Zool. J. *4:* 239, pl. 8. Nepal.
1842. *Galidictis chrysogaster* H. Smith, Jardine's Nat. Lib. *35*, Mamm. 1: 167. Mussoorie, Kumaon, Northern India.
1901. *Mustela flavigula typica* Bonhote, Ann. Mag. N.H. *7:* 343.
1901. *Mustela flavigula kuatunensis* Bonhote, Ann. Mag. N.H. *7:* 348. Kuatun, North-Western Fukien, Southern China.
1910. *Mustela flavigula szetchuensis* Hilzheimer, Zool. Anz. *35:* 310. Sungpanting, Szechuan, China.

MARTES FLAVIGULA FLAVIGULA [*contd.*]

1922. *Charronia melli* Matschie, in Mell, Arch. Nat. *88*, sect. A, 10: 17, 34. Kwantung, Southern China.

1930. *Charronia yuenshanensis* Shih, Bull. Dept. Biol. Sun Yatsen Univ. Canton, No. 9, 3. Yuen Shan, Wuchanghsien, Hunan, China.

Range: Kashmir to Tibet and Southern China, north to Shensi, Kansu.

MARTES FLAVIGULA ATERRIMA Pallas, 1811

1811. *Viverra aterrima* Pallas, Zoographia, *1:* 81. Between the Uth and Amur Rivers, Eastern Siberia.

1862. *Mustela (Martes) flavigula* var. *borealis* Radde, Reise Ost. Sib. *1:* 19, 24. Mountains of Bureinsk, Siberia.

1922. *Charronia flavigula koreana* Mori, Ann. Mag. N.H. *10:* 610. Korio, near Seoul, Korea.

MARTES FLAVIGULA CHRYSOSPILA Swinhoe, 1866

1866. *Martes chrysospila* Swinhoe, Ann. Mag. N.H. *18:* 286. Mountain forests of Central Formosa.

1870. *Martes flavigula xanthospila* Swinhoe, P.Z.S. 623. Forests of Central Mountains of Formosa.

MARTES FLAVIGULA PENINSULARIS Bonhote, 1901

1901. *Mustela flavigula peninsularis* Bonhote, Ann. Mag. N.H. *7:* 346. Bankasun, Tenasserim. Range: to Malay Peninsula.

MARTES FLAVIGULA INDOCHINENSIS Kloss, 1916

1916. *Martes flavigula indochinensis* Kloss, P.Z.S. 35. Klong Menao, South-Eastern Siam. Range: Northern Tenasserim, Siam, Annam.

Martes gwatkinsi Horsfield, 1851 South Indian Yellow-throated Marten

Approximate distribution of species: Nilgiri Hills, Coorg and Travancore, Southern India.

MARTES GWATKINSI Horsfield, 1851

1851. *Martes gwatkinsii* Horsfield, Cat. Mamm. E. Ind. Co. 99. Madras, India.

Genus **GULO** Storr, 1780

1775. *Gulo* Frisch, Natur-system der vierfüss. Thiere, 17 see page 27.

1780. *Gulo* Storr, Prodr. Meth. Mamm. 34, Tab. A. *Mustela gulo* Linnaeus.

1 species: *Gulo gulo*, page 250

Gulo gulo Linnaeus, 1758 Glutton, or Wolverine

Approximate distribution of species: Norway and Sweden; "right across the taiga and forest-tundra zone of Eastern Europe, Asia and North America. In the summer it invades the tundra, as far as the sea coast. In Eastern Europe and Western Siberia

it extends roughly as far south as the latitude of Sverdlovsk, but occurs in an isolated area south-west of Kiev. In the more eastern parts of Asia it extends south to the Altai, Tuva Republic, Mongolia and Northern Manchuria, inclusive. It does not occur in the Transbaikal steppes. In the south of the Ussuri region it is rare. It occurs in Sakhalin and the Shantar Islands" (Bobrinskii).

GULO GULO GULO Linnaeus, 1758

1758. *Mustela gulo* Linnaeus, Syst. Nat. 10th ed. *1:* 45. Lapland.
1780. *Gulo sibirica* Pallas, Spic. Zool. *2*, 14: 35, Tab. 2.
1792. *Ursus gulo albus* Kerr, Anim. Kingd. Syst. Cat. No. 381, 190. Kamtchatka.
1816. *Gulo vulgaris* Oken, Lehrb. Nat. *3*, 2: 1004. Renaming of *gulo*.
1820. *Gulo borealis* Nilsson, Skand. Faun. Dagg. Djur. *1:* 95. Renaming of *gulo*.
1820. *Gulo arcticus* Desmarest, Mammalogie, 174. Renaming of *gulo*.
1829. *Gulo arctos* Kaup, Entw. Gesch. Nat. Syst. Europ. Thierw. *1:* 68. Renaming of *gulo*.
1910. *Gulo luscus* Trouessart, Faune Mamm. d'Europ. 71. Not of Linnaeus, 1766.
1918. *Gulo biedermanni* Matschie, S.B. Ges. Nat. Fr. Berlin, 147. Mountains south of Lake Teletzkoie, Siberian Altai.
1918. *Gulo wachei* Matschie, *op. cit.* 147. North of Beluha Mountains, in upper reaches of River Katun, Siberian Altai.
1922. *Gulo kamtschaticus* Dybowsky, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.* Kamtchatka.

Genus **MUSTELA** Linnaeus, 1758

1758. *Mustela* Linnaeus, Syst. Nat. 10th ed. *1:* 45. *Mustela erminea* Linnaeus.
1775. *Putorius* Frisch, Natur-system der vierfüss. Thiere, 11 (see page 2).
1817. *Putorius* Cuvier, Règne Anim. *1:* 147. *Mustela putorius* Linnaeus. Valid as a subgenus.
1829. *Arctogale* Kaup, Entw. Gesch. Nat. Syst. Europ. Thierw. *1:* 30. *Mustela erminea* Linnaeus.
1829. *Ictis* Kaup, Entw. Gesch. Nat. Syst. Europ. Thierw. *1:* 35, 40, 41. *Mustela vulgaris* Erxleben = *Mustela nivalis* Linnaeus. Not of Schinz, 1824–1828.
1840. *Foetorius* Keyserling & Blasius, Wirbelth. Europ. 68. *Mustela putorius* Linnaeus.
1841. *Gale* Wagner, Schreb. Säugeth. Suppl. *2:* 234. *Mustela vulgaris* Erxleben = *Mustela nivalis* Linnaeus.
1841. *Lutreola* Wagner, Schreb. Säugeth. Suppl. *2:* 239. *Viverra lutreola* Linnaeus.
1865. *Gymnopus* Gray, P.Z.S. 118. *Mustela leucocephalus* Gray = *Mustela nudipes* Desmarest. Not of Brookes, 1828.
1871. *Mustelina* Bogdanov, Proc. Imp. Univ. Kazan, *1:* 167. *Mustela lutreola* Linnaeus.
1871. *Hydromustela* Bogdanov, Proc. Imp. Univ. Kazan, *1:* 167. *Mustela lutreola* Linnaeus.
1899. *Eumustela* Acloque, Faune de France, Mamm. 62. Based on *vulgaris* and *erminea*.
1911. *Kolonokus* Satunin, Mitt. Kauk. Mus. *5:* 264. *Mustela sibirica* Pallas.
1921. *Plesiogale* Pocock, P.Z.S. 805. *Mustela nudipes* Cuvier. Not of Pomel, 1853.
1947. *Pocockictis* Kretzoi, Ann. H.N. Mus. Hung. *40:* 285. To replace *Plesiogale* Pocock. *Mustela nudipes* Cuvier.

8 species in the area covered by this list:

Mustela altaica, page 259
Mustela erminea, page 253
Mustela kathiah, page 259
Mustela lutreola, page 262
Mustela nivalis, page 256
Mustela putorius, page 264
Mustela sibirica, page 260
Mustela strigidorsa, page 264

Miller, 1912, *Cat. Mamm. Western Europe*, 382, divided *Mustela* into three subgenera, *Mustela*, *Lutreola* and *Putorius*, and gave characters for the three groups. These subgenera are recognized by Bobrinskii, 1944, *Mammals of the U.S.S.R.*, and the characters given by Miller are more or less confirmed. Pocock, on the other hand, gave *Putorius* generic rank, and appeared to ignore *Lutreola*.

Russian authors recognize two species of the subgenus *Putorius*, which are said to occur together in some places: *M. putorius*, characterized by having the tail nearly all black, the underparts blackish, black predominating on upper side of body, and the skull with hardly any postorbital constriction; and *M. eversmanni*, with only the terminal half of the tail black, the underparts light-coloured, the upper parts with yellowish straw-colour predominating, and the skull with a marked postorbital constriction. The Ferret, *M. p. furo* of Linnaeus, antedates *eversmanni*, but in external appearance seems to agree more with *eversmanni* than *putorius*. Pocock thought it was a semi-domesticated descendant of *putorius*, and stated that its skull was like that of *putorius*, not *eversmanni*. He thoroughly reviewed the group, 1936, *P.Z.S.* 691, and came to the conclusion that all members of the subgenus *Putorius* are one species. According to Bobrinskii, *putorius* and *eversmanni* inhabit different types of country, the latter "avoids both woodland areas densely grown with bushes, and human settlements", unlike *putorius*. On account of intermediate characters within the subgenus, we prefer tentatively to follow Pocock and list all Polecats in one species only, *M. putorius*.

An attempt to correlate the work of Miller, Bobrinskii, G. Allen and Pocock with regard to the species of the subgenus *Mustela*, and to include outlying forms not dealt with by those authors, as, for instance, from Japan, South-Western Asia (where the subgenus is rare) and North Africa leads to the following provisional results. *M. strigidorsa* differs from all others by its narrow, pale middorsal stripe. The soles of its feet are naked. The two species *lutreola and sibirica* stand somewhat apart from the remainder in that the underparts are only very little paler, if at all, than the upper parts. (*M. sibirica* can have a white chin.) They differ from each other cranially, as noted by Miller (1912) (*Lutreola*, subgenus, for *M. lutreola*, while *sibirica* appears to agree with subgenus *Mustela*); and as figured by Bobrinskii (1944, 124). In the remaining species, the underparts are normally clearly lighter coloured than the upperparts, except of course in the winter coat of those forms which turn completely white. *M. erminea* is characterized by its very sharply contrasted black tailtip, which is retained even in the wholly white winter coat when present. We prefer to regard the outlying *M. hibernica* from Ireland as a race of *erminea*. As discussed below, it appears that *erminea* occurs in Algeria. There remain the *nivalis* group and the *altaica* group. In these, the black tailtip is usually absent or is represented by a few dark hairs only at the end of the tail. In the Eastern Asiatic *M. altaica* and *M. kathiah* the tail appears

not specially shortened, and so far as we can discover is nearly always at least 100 mm. in length. We do not think that G. Allen was correct in making *kathiah* a subspecies of *altaica*, as the two seem to occur in the same general neighbourhood in Himalayan India. Pocock has given characters to separate the two species, and we retain *kathiah*. In *M. nivalis* the colour is not very different from the *altaica* type, but the tail is normally very shortened, being less than 100 mm. in length so far as is ascertainable, except in North Africa. A broad view is here taken of the species *M. nivalis*. Some authors prefer to regard some of the eastern races as subspecies of the North American *M. rixosa* Bangs (*Putorius rixosus* Bangs, 1896, *Proc. Biol. Soc. Washington, 10:* 21, Saskatchewan, Canada), but Bobrinskii refers all the Russian and Siberian weasels to *M. nivalis*. The possibility that there is a larger and a smaller species of the *nivalis* group cannot however be finally dismissed. The names *subpalmata* (1832, Egypt), *numidica* (1855, Morocco) and *algirica* (1895, Algeria) are available for the North African members of the subgenus *Mustela*. The first is obviously a large member of the *nivalis* group, in that there is no suspicion of a black tailtip. The second has a short black tailtip, according to Cabrera, but as figured by him looks more like *subpalmata*, the dark tip being poorly contrasted, and a specimen in the British Museum from Morocco seems to have no black tip. The form *algirica* was described by Thomas as a race of *M. erminea*, and certainly seems to be, on account of the black tailtip. Its feet, also, are whiter than our other North African skins. Cabrera, and following him G. Allen, placed it in synonymy of *numidica*. The question cannot be settled without more specimens, but if it is a synonym, then *numidica* represents *erminea*, and if not, then both *nivalis* and *erminea* occur in North-West Africa. Tentatively, the latter conclusion has been adopted. The large Egyptian weasel (*subpalmata*) can have the tail over 100 mm. in length, though it seems always under half the head and body length in our specimens, which is not normal in *M. altaica* and *M. kathiah* so far as measurements of these are available.

Cranial characters used by Bobrinskii to separate *M. altaica* and *sibirica* from *M. nivalis* and *erminea* are not constant in the British Museum material when specimens from outside the U.S.S.R. are considered.

Of other outlying forms, *M. itatsi*, Japan, often given specific rank, does not seem certainly separable from *M. sibirica*. The form *stoliczkana* (Yarkand) and the small form *russelliana* (Szechuan) seem to represent the *nivalis* group, and the recently described *tonkinensis* (Indo-China) may also be a largish southern member of the same group; it is not a representative of *kathiah*, since the latter occurs in the same area.

The only other species in Asia is *M. nudipes* Cuvier, 1821, from Sumatra, Malaya and Borneo; on this, see Pocock, 1941, *Fauna Brit. India. 2:* 379.

Subgenus *MUSTELA* Linnaeus, 1758

Mustela erminea group

Mustela erminea Linnaeus, 1758 — Stoat (Ermine)

Approximate distribution of species: Europe, from Arctic south to Pyrenees and Alps (including British Isles, west to Ireland, Sweden, Norway, France, Belgium,

Holland, Denmark, Switzerland, Germany, Poland, Czechoslovakia); Russian range given by Bobrinskii as "whole of Eastern Europe except Novaya Zemlya and Crimea. The Northern Caucasus, where it is very rare. Does not occur in Transcaucasia. Whole of Siberia to the Shantar Islands and Sakhalin. Kotelnuii Island (Novosibirskie group). Kazakstan (except for the extreme south), Kirghizia and Tadzhikistan". Mongolian Altai, Kashgaria, Japan; Afghanistan; Kashmir; Algeria. Also in North America.

MUSTELA ERMINEA ERMINEA Linnaeus, 1758

1758. *Mustela erminea* Linnaeus, Syst. Nat. 10th ed. *1:* 46. Sweden.
1792. *Mustela erminea hyberna* Kerr, Anim. Kingd. 181.
1816. *Mustela herminea* Oken, Lehrb. Nat. *3*, 2: 1026. Renaming of *erminea*.
1827. *Mustela erminea maculata* Billberg, Synops. Faun. Scandinaviae, 8. Scandinavia.

Range: Norway, Sweden, Kola Peninsula in Northern Russia.

MUSTELA ERMINEA AESTIVA Kerr, 1792

1792. *Mustela erminea aestiva* Kerr, Anim. Kingd. 181. Germany.
1820. *Mustela erminea major* Nilsson, Skand. Faun. Dagg. Djur. *1:* 34. Carlskrone, Blekinge, Sweden.
(?) 1920. *Putorius ermineus giganteus* Burg, Der Weidmann, 48, 388. (*N.E.*)
(?) 1920. *Putorius ermineus alpestris* Burg, *loc. cit.* (*N.E.*)

Range: Continental Europe, from Southern Sweden south to Alps and Pyrenees, eastwards through Russia to Kazakstan.

MUSTELA ERMINEA HIBERNICA Thomas & Barrett-Hamilton, 1895

1895. *Putorius hibernicus* Thomas & Barrett-Hamilton, Ann. Mag. N.H. *15:* 374. Enniskillen, Co. Fermanagh, Ireland. Range includes the Isle of Man.

MUSTELA ERMINEA ALGIRICA Thomas, 1895

1895. *Putorius ermineus algiricus* Thomas, Ann. Mag. N.H. *15:* 451. Near Algiers, Algeria.

MUSTELA ERMINEA FERGHANAE Thomas, 1895

1895. *Putorius ermineus ferghanae* Thomas, Ann. Mag. N.H. *15:* 452. Mt. Kara Karyk, Ferghana, Eastern Russian Turkestan.
1908. *Mustela whiteheadi* Wroughton, J. Bombay N.H. Soc. *18:* 882. Kaghan Valley, Hazara, Northern India.

Range: Eastern Russian Turkestan, southwards to Kashmir; also, according to Ognev, Kashgar and Afghanistan.

MUSTELA ERMINEA ARCTICA Merriam, 1896

1896. *Putorius arcticus* Merriam, North Amer. Fauna, *11:* 15. Point Barrow, Alaska.
(?) 1922. *Putorius erminea* var. *kamtschatica* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.*
(?) 1944. *Mustela erminea digna* Hall, Proc. Calif. Acad. Sci. *23:* 559. Kamtchatka.

MUSTELA ERMINEA STABILIS Barrett-Hamilton, 1904

1904. *Putorius ermineus stabilis* Barrett-Hamilton, Ann. Mag. N.H. *13:* 394. Blandford, Dorset, England. Range: mainland of Great Britain.

MUSTELA ERMINEA RICINAE Miller, 1907

1907. *Putorius erminea ricinae* Miller, Ann. Mag. N.H. *20:* 395. Islay House, Island of Islay, Hebrides. Range also includes Island of Jura, Hebrides.

MUSTELA ERMINEA MINIMA Cavazza, 1912

1912. *P(utorius) ermineus* var. *minimus* Cavazza, Ann. Mus. Civ. Stor. Nat. Genova, 3A, *5* (45): 194. Monte Rosa, Switzerland.

MUSTELA ERMINEA LYMANI Hollister, 1912

1912. *Mustela lymani* Hollister, Smiths. Misc. Coll. *60,* 14: 5. Tapucha, Altai Mountains, Siberia.

MUSTELA ERMINEA NIPPON Cabrera, 1913

1913. *Mustela nippon* Cabrera, Bol. Soc. Esp. *13:* 392. Sinano, Hondo, Japan.

MUSTELA ERMINEA TOBOLICA Ognev, 1923

1923. *Arctogale erminea tobolica* Ognev, Biol. Mitt. Timiriazeff, *1:* 112. Tara, Tobolsk Govt., Western Siberia.

MUSTELA ERMINEA TRANSBAIKALICA Ognev, 1928

1928. *Mustela erminea transbaikalica* Ognev, Mém. Soc. Amis. Sci. Nat. Moscou, Sect. Zool. *2:* 14, 29. Sosnovka, Bargusin forest, east shore of Lake Baikal, Transbaikalia.

MUSTELA ERMINEA ORIENTALIS Ognev, 1928

1928. *Mustela erminea orientalis* Ognev, Mém. Soc. Amis. Sci. Nat. Moscou, Sect. Zool. *2:* 15, 29. Village Pochodskoie, Kolyma River, North-Eastern Siberia.

1914. *Mustela kanei* G. Allen, Proc. New Engl. Zool. Club, *5:* 58. Nijni Kolymsk, Eastern Siberia. Not of Baird, 1857. Recorded from Sakhalin, Kuriles and Hokkaido. But see also Hall, 1944, Proc. Calif. Acad. Sci. 23: 555.

MUSTELA ERMINEA MONGOLICA Ognev, 1928

1928. *Mustela erminea mongolica* Ognev, Mém. Sect. Zool. Amis. Sci. Nat. Moscou, *2:* 18, 29. Dundu-Saichan, Mongolian Altai.

MUSTELA ERMINEA BATURINI Ognev, 1929

1929. *Mustela erminea baturini* Ognev, Bull. Pacif. Sta. Vladivostock, *2,* 5: 9, 40. Bolshoi Shantar Island, Eastern Siberia.

MUSTELA ERMINEA OGNEVI Jurgenson, 1932

1932. *Mustela erminea ognevi* Jurgenson, Zool. Anz. *98:* 11. Delta of River Tas, extreme north of Central Siberia.

MUSTELA ERMINEA SHNITNIKOVI Ognev, 1935

1935. *Mustela erminea shnitnikovi* Ognev, Mamm. U.S.S.R. *3:* 37. Kopal district, Semirechyia, Eastern Russian Turkestan.

MUSTELA ERMINEA KARAGINENSIS Jurgenson, 1936

1936. *Mustela erminea karaginensis* Jurgenson, Bull. Soc. Nat. Moscou, Sec. Biol. *45:* 240, 243. Karaginski Island, off north-east coast of Kamtchatka.

MUSTELA ERMINEA NAUMOVI Jurgenson, 1938

1938. *Mustela erminea naumovi* Jurgenson, Trav. Res. Etat. Altai, *1:* 124. Source of the Khatanga, Turukhansk district (Northern Yenesei), Siberia.

MUSTELA ERMINEA MARTINOI *nom. nov.*

1931. *Mustela erminea birulai* Martino, Ann. Mus. Zool. Acad. Leningrad, *31:* 208. Aktiubinsk, Kirghiz Steppes, Russian Asia. Not of Ognev, 1928.

Incertae sedis

Putorius erminea var. *sibirica* Dybowski, 1922, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.* Not of Pallas, 1773.

Mustela nivalis group

Mustela nivalis Linnaeus, 1766 — Weasel. — Type of *Gale* Wagner, 1841, if further subgeneric division of the genus is required.

Approximate distribution of species: Europe, including Britain, France, Belgium, Holland, Denmark, Norway, Sweden, Germany, Poland, Switzerland, Portugal, Spain, Italy, Sicily, Yugoslavia, Rumania; also Sardinia, Malta and Crete. In the U.S.S.R., the whole Union, according to Bobrinskii, although its presence has not been established in the north of the Taimyr Peninsula, and the interior of Kizil-Kum and Kara-Kum deserts, and it does not occur in the islands of the Arctic Ocean. Asia Minor; Afghanistan; Mongolia, Korea, Japan; Chinese Turkestan; Szechuan, in China; Egypt, Algeria, Morocco; ? Indo-China. Perhaps also in North America.

MUSTELA NIVALIS NIVALIS Linnaeus, 1766

1766. *Mustela nivalis* Linnaeus, Syst. Nat. 12th ed. *1:* 69. Province of Vesterbotten, Sweden.

1777. *Mustela vulgaris* Erxleben, Syst. Regn. Anim. *1:* 471. "Temperate Europe." Listed as a valid race by Ognev, 1935, Mamm. U.S.S.R. *3:* 58, for Southern Russian localities, but considered a synonym by Miller, 1912.

1811. *Mustela gale* Pallas, Zoogr. Rosso-Asiat. 94. Renaming of *vulgaris*.

1820. *Mustela minor* Nilsson, Skand. Fauna, *1:* 35. Renaming of *nivalis*.

1853. *Putorius minutus* Pomel, Cat. Méth. et Descr. Vert. Foss. Loire, 51. Near Paris, France.

1869. *Foetorius pusillus* Fatio, Faune Vert. Suisse, *1:* 332. Not of De Kay, 1842.

1900. *Putorius nivalis typicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 42.

1908. *Putorius nivalis* var. *monticola* Cavazza, Richerche sui "*Putorius nivalis*" e sui "*Putorius erminеus*" D'Italia, 37 (N.T., see Miller, 1912, 412). High valleys of the Alps.

Range: Europe, from Arctic coast to Alps and Pyrenees, and from Britain eastwards into Russia.

MUSTELA NIVALIS BOCCAMELA Bechstein, 1800

1800. *Mustela boccamela* Bechstein, Pennant, Übers. vierf. Thiere, *2:* 395. Sardinia.

(?) 1868. (*Mustela vulgaris*) var. *fulva* Mina Palumbo, Ann. Agric. Sicil. *12:* 53. (*N.V.*) Probably Le Madonie, Sicily. See Miller, 1913, Proc. Biol. Soc. Washington, *26:* 80. Not of Kerr, 1792.

(?) 1868. (*Mustela vulgaris*) var. *albipes* Mina Palumbo, *loc. cit.* 54.

1869. *Mustela vulgaris* var. *meridionalis* Costa, Ann. Mus. Zool. della R. Univ. di Napoli, 40. Southern Italy.

1900. *Putorius nivalis italicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 45. Grezzana, highlands of Verona, Italy.

1900. *Putorius nivalis siculus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 46. Marsala, Sicily.

1901. *Mustela (Ictis) dombrowskii* Matschie, S.B. Ges. Nat. Fr. Berlin, 231. Siulnita, Rumania. Ognev thinks that this is a synonym of *vulgaris*, which is listed above under *M. nivalis nivalis.*

1905. *Foetorius pusillus major* Fatio, Arch. Sci. Phys. Nat. Genève, *19*, 4: 512. Poschiavo, Grisons, Switzerland. Not of Nilsson, 1820.

(?) 1920. *Putorius boccamela alpinus* Burg, Der Weidmann, 51, 409. (*N.V.*)

Range: Italy, south coast of France, Sicily, Malta, Sardinia, Switzerland, Rumania.

MUSTELA NIVALIS SUBPALMATA Hemprich & Ehrenberg, 1833

1833. *Mustela subpalmata* Hemprich & Ehrenberg, Symb. Phys. Mamm. 3, *2*, k *verso.* In houses, Cairo and Alexandria, Egypt.

MUSTELA NIVALIS NUMIDICA Pucheran, 1855

1855. *Putorius numidicus* Pucheran, Rev. Mag. Zool. *7:* 393. Tangier, Morocco.

1865. *Mustela erminea* var. (1), *africana* Gray, P.Z.S. 111. Algiers, Algeria. Not *africana* Desmarest, 1818, Nouv. Dict. H.N. *19:* 376, which is shown by Cabrera, 1914, to have been based on a South American species.

1904. *Putorius nivalis atlas* Barrett-Hamilton, Ann. Mag. N.H. *13:* 323. Atlas Mountains, Morocco.

(?) 1908. *Putorius nivalis* var. *corsicanus* Cavazza, Ricerche sui "*Putorius nivalis*" e sui "*Putorius ermineus*" d'Italia, 37. Corsica. (*N.V.* See Miller, *1912*, 412.)

Range: Morocco, Algeria, Malta, Azores, ? Corsica. Miller suggests it was introduced in Malta and the Azores. Both Miller and G. Allen (1939) give this large form specific status.

MUSTELA NIVALIS STOLICZKANA Blanford, 1877

1877. *Mustela stoliczkana* Blanford, J. Asiat. Soc. Bengal, *46*, 2: 260. Yarkand, Chinese Turkestan. Ognev also quoted it from Djarkent (Eastern Russian Turkestan) and the Gobi, and it occurs Afghanistan (B.M.).

MUSTELA NIVALIS NIKOLSKII Smirnov, 1899

1899. *Foetorius vulgaris* var. *nikolskii* Smirnov, Poslonjivotn. Krymea, 59 (appendix to *68*, Zap. Imp. Akad. Nauk). (*N.V.*) Near Simferopol, Crimea, Southern Russia.

MUSTELA NIVALIS IBERICA Barrett-Hamilton, 1900

1900. *Putorius nivalis ibericus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 45. Seville, Spain. Range includes Portugal and Balearic Isles.

MUSTELA NIVALIS PALLIDA Barrett-Hamilton, 1900

1900. *Putorius nivalis pallidus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 48. Kokand, Ferghana, Eastern Russian Turkestan.

MUSTELA NIVALIS CAUCASICA Barrett-Hamilton, 1900

1900. *Putorius nivalis caucasicus* Barrett-Hamilton, Ann. Mag. N.H. *5:* 48. Hotshal Mountains, 12,000 ft., Caucasus.

MUSTELA NIVALIS PYGMAEA J. Allen, 1903

1903. *Putorius* (*Arctogale*) *pygmaeus* J. Allen, Bull. Amer. Mus. N.H *19:* 176. Gichiga, west coast of Okhotsk Sea, Eastern Siberia.

(?) 1922. *Ictis nivalis* var. *kamtschatica* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.*

1926. *Mustela punctata* Domaniewski, Ann. Mus. Zool. Polon. H.N. *5:* 55. Darasun, Eastern Transbaikalia.

1938. *Mustela rixosa pygmaea* G. Allen, Mamm. China & Mongolia, *1:* 383.

Range: Eastern Siberia, Manchuria, Mongolia.

MUSTELA NIVALIS GALINTHIAS Bate, 1906

1906. *Putorius nivalis galinthias* Bate, P.Z.S. *1905, 2:* 319. Crete. (Listed as a distinct species allied to "*africana*" = *numidica* by Miller (1912).)

MUSTELA NIVALIS DINNIKI Satunin, 1907

1907. *Putorius nivalis dinniki* Satunin, Mitt. Kaukas. Mus. Tiflis, *3:* 105 (Russian), 151 (German). Stavropol, Caucasus.

MUSTELA NIVALIS RUSSELLIANA Thomas, 1911

1911. *Mustela russelliana* Thomas, Abstr. P.Z.S. 4; P.Z.S. 168. Tatsienlu, Szechuan, China. G. Allen (1938) retains this as a species, suggesting it is near *stoliczkana.* Based on one adult female and three other immature specimens.

MUSTELA NIVALIS NAMIYEI Kuroda, 1921

1921. *Mustela rixosa namiyei* Kuroda, J. Mamm. *2:* 209. Awomori, Northern Hondo, Japan.

(?) 1936. *Mustela pygmaea yesoidsuna* Kishida, Dobuts Zasshi. *48,* 4: 177. Hokkaido, Japan.

(?) 1936. *Mustela pygmaea caraftensis* Kishida, *loc. cit.* Sakhalin.

Ranges to the Kuriles.

MUSTELA NIVALIS MOSANENSIS Mori, 1927

1927. *Mustela nivalis mosanensis* Mori, J. Chosen N.H. Soc. *5:* 28. Yengan, near Mosan, Korea.

MUSTELA NIVALIS TRETTAUI Kleinschmidt, 1937

1937. *Mustela trettaui* Kleinschmidt, Falco, *33:* 11. Germany.

Mustela (?) nivalis tonkinensis Björkegren, 1942

1942. *Mustela tonkinensis* Björkegren, Ark. Zool. *33*B, 15: 1. Chapa, Tonkin, Indo-China.

Mustela altaica group

Mustela altaica Pallas, 1811 Alpine Weasel

Approximate distribution of species: in the U.S.S.R., from Ussuri region westwards to region of Lake Baikal, Altai Mountains, and mountains of Eastern Russian Turkestan (Tarbagatai, Balkash region, Tianshan, Pamir); Mongolia, Manchuria and Western Sinkiang (Ognev); Tibet; states of Kansu, Szechuan and Shansi, in China; Himalayas, from Kashmir to Sikkim.

Mustela altaica altaica Pallas, 1811

1811. *Mustela altaica* Pallas, Zoogr. Ross. As. 98. Altai Mountains.

1823. *Putorius alpinus* Gebler, Mém. Soc. Imp. Nat. Mosc. *6:* 212. Mines of Liddersk, Altai Mountains.

1914. *Mustela sacana* Thomas, Ann. Mag. N.H. *13:* 566. Near Przewalsk, Djarkent, Semirechyia, Eastern Russian Turkestan.

Range: Siberia and China, as listed under the species. G. Allen recognizes only this form in China, but Pocock thought the next race occurred in Tibet, Kansu and Moupin.

Mustela altaica temon Hodgson, 1857

1857. *Mustela temon* Hodgson, J. Asiat. Soc. Bengal, *26:* 207. Sikkim.

(?) 1872. *Putorius astutus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 92. Moupin, Szechuan. G. Allen thinks this name is a synonym of *M. kathiah.* Against this opinion see Pocock, 1941, 353 (footnote).

1911. *Mustela longstaffi* Wroughton, J. Bombay N.H. Soc. *20:* 931. Teza, Upper Sutlej Valley, Northern India, 14,000 ft.

Range: Himalayas (Sikkim to Gilgit and Karakorum Mountains) and Tibet.

Mustela altaica raddei Ognev, 1928

1928. *Kolonocus alpinus raddei* Ognev, Mém. Sect. Zool. Soc. Amis. Sci. Nat. Moscou, No. 2: 9, 28. Kulusytaevsk village, near Tareinor, Transbaikalia.

Mustela altaica birulai Ognev, 1928

1928. *Kolonocus alpinus birulai* Ognev, Mém. Sect. Zool. Soc. Amis. Sci. Nat. Moscou, No. 2: 10, 28. Liangar, Western Pamir Mountains.

Mustela kathiah Hodgson, 1835 Yellow-bellied Weasel

Approximate distribution of species: Karakorum Mountains; Kumaon and Nepal, eastwards to Assam, Burma, Indo-China; Hupeh, ? Szechuan, Yunnan, Kwantung and Fukien in Southern China.

MUSTELA KATHIAH KATHIAH Hodgson, 1835

1835. *Mustela (Putorius) kathiah* Hodgson, J. Asiat. Soc. Bengal, *4:* 702. The Kachar, northern region of Nepal.

1837. *Mustela (Putorius) auriventer* Hodgson, J. Asiat. Soc. Bengal, *6:* 563.

1895. *Putorius dorsalis* Trouessart, Bull. Mus. H.N. Paris, *1:* 235. Tatsienlu, Szechuan, China.

?) 1910. *Arctogale tsaidamensis* Hilzheimer, Zool. Anz. *35:* 309. Tsaidam Mountains, Western Kokonor. G. Allen (1938, 380) suggests this is the same as either *kathiah* or *altaica*, it is not clear which.

1922. *Arctogale melli* Matschie, Arch. Nat. *88*, Sect. A, 10: 17. Kwantung, Southern China.

MUSTELA KATHIAH CAPORIACCOI de Beaux, 1935

1935. *Mustela kathiah caporiaccoi* de Beaux, Atti Soc. Ligust. *14:* 65. Baltoro, Karakorum Mountains, Kashmir.

Mustela sibirica group

(*Mustela sibirica* is type of *Kolonokus* Satunin, if further subgeneric division of the genus is required.)

Mustela sibirica Pallas, 1773 Siberian Weasel

Approximate distribution of species: In the U.S.S.R., "whole of the forest part of Siberia north approximately to the limit of the full-grown forest, and south-west to the Altai and adjoining areas, inclusive. Does not occur in Kamtchatka, the Shantar Islands and Sakhalin. West of the Ural range it extends as far as Bashkiria, the adjoining part of Chkalovsk Province, the eastern half of Tatary and Kirov Province" (Bobrinskii). Japan, Formosa, and throughout China, Manchuria, Tibet. Himalayan India, from Kashmir eastwards to Northern Burma. Java.

MUSTELA SIBIRICA SIBIRICA Pallas, 1773

1773. *Mustela sibirica* Pallas, Reise. Russ. Reichs. *2*, appendix: 701. Vorposten Tigerazkoi, near Ust-Kamenogorsk, Western Altai.

?) 1904. *Mustela sibirica miles* Barrett-Hamilton, Ann. Mag. N.H. *13:* 391. Dauria, Transbaikalia, Eastern Siberia.

1911. *Kolonokus sibiricus australis* Satunin, Mitt. Kauk. Mus. *5:* 265, 280. Tyumen district, Western Siberia.

Range: Russia and Siberia as under the species, except the Far East.

MUSTELA SIBIRICA SUBHEMACHALANA Hodgson, 1837

1837. *Mustela (Putorius) subhemachalanus* Hodgson, J. Asiat. Soc. Bengal, *6:* 563. Nepal.

1842. *Mustela humeralis* Blyth, J. Asiat. Soc. Bengal, *11:* 99, 280 (footnote). Sikkim.

1843. *Mustela horsfieldii* Gray, Ann. Mag. N.H. *11:* 118. Bhutan.

Range: Nepal to Bhutan, 5,000–16,000 ft.

MUSTELA SIBIRICA CANIGULA Hodgson, 1842

1842. *Mustela canigula* Hodgson, J. Asiat. Soc. Bengal, *11:* 279. Lhasa, Tibet. Perhaps ranging to Nepal.

MUSTELA SIBIRICA HODGSONI Gray, 1843

1843. *Mustela hodgsoni* Gray, Ann. Mag. N.H. *11:* 118. Himalayas. Range: Kashmir and Western Himalayas, from Chamba to Garwhal, 7,000–9,000 ft.

MUSTELA SIBIRICA ITATSI Temminck, 1844

1844. *Mustela itatsi* Temminck, Fauna Japonica, Mamm. 34, pl. vii, fig. 2. Japan.
1844. *Mustela natsi* Temminck, *op. cit.* 34 (footnote). This form is tentatively included as a race of *M. sibirica* on the basis of the B.M. material.

Range: Hokkaido, Hondo, Shikoku, Kiushiu, Iki Island, Japan.

MUSTELA SIBIRICA DAVIDIANA Milne-Edwards, 1872

1872. *Putorius davidianus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 92 (footnote). Kiangsi, Southern China.
1904. *Putorius sibiricus noctis* Barrett-Hamilton, Ann. Mag. N.H. *13:* 390. Sanyentze, Fukien, South-Eastern China.
1913. *Mustela* (*Lutreola*) *taivana* Thomas, Ann. Mag. N.H. *12:* 91. Mt. Arizan, 8,000 ft. Formosa. (For status, see Pocock, 1941, 370.)
1922. *Lutreola melli* Matschie, Arch. Nat. *88*, Sect. A, 10: 35. Canton region, Southern China.

Range: South-Eastern China, north to Hupeh, and Formosa.

MUSTELA SIBIRICA FONTANIERI Milne-Edwards, 1871

1871. *Putorius fontanierii* Milne Edwards, Rech. Mamm. 205, pl. 61, fig. 1. Peiping (Pekin), China.
1907. *Lutreola stegmanni* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 150. Near Tsingtao, Shantung, China.

Range: Northern China, Shantung, Chihli, Shensi and Shansi.

MUSTELA SIBIRICA MOUPINENSIS Milne-Edwards, 1874

1874. *Putorius moupinensis* Milne-Edwards, Rech. Mamm. 347, pls. 59 (fig. 2) and 60 (fig. 4). Moupin, Szechuan, China.
1910. *Lutreola major* Hilzheimer, Zool. Anz. *35:* 310. Near Sungpan, Northern Szechuan, China. Not of Fatio, 1905; nor Nilsson, 1820.
1910. *Lutreola tafeli* Hilzheimer, *loc. cit.* Near Sungpan, Szechuan, China.
1921. *Mustela hamptoni* Thomas, J. Bombay N.H. Soc. *27:* 500. Mt. Imaw-bum, Kachin Province, 9,000 ft., Northern Burma.

Range: Szechuan, Kansu, Yunnan and Northern Burma.

MUSTELA SIBIRICA QUELPARTIS Thomas, 1908

1908. *Lutreola quelpartis* Thomas, P.Z.S. 53. Quelpart Island, Korea.

MUSTELA SIBIRICA MANCHURICA Brass, 1911

1911. *Mustela manchurica* Brass, Reiche Pelze, 490. Manchuria.
1931. *Kolonocus sibiricus katsurai* Kishida, Dobuts Zasshi. *43:* 380, *nom. nud.*

Range includes the Far East of Siberia.

MUSTELA SIBIRICA SHO Kuroda, 1924

1924. *Lutreola itatsi sho* Kuroda, on New Mamm. from Riu Kiu Islands and vicinity, Tokyo, 10. Miyanoura, Yakushima Island, Japan. Range: Tanegashima and Yakushima, south of Japan.

MUSTELA SIBIRICA COREANA Domaniewski, 1926

1926. *Kolonocus sibiricus coreanus* Domaniewski, Ann. Zool. Mus. Polon. *5:* 55. Seoul, Korea.
1931. *Kolonocus sibiricus peninsulae* Kishida, Dobuts Zasshi. *43:* 380, *nom. nud.*

MUSTELA SIBIRICA CHARBINENSIS Lowkashkin, 1934

1934. *Mustela (Kolonocus) sibirica charbinensis* Lowkashkin, China J. Sci. & Arts, *20:* 49. Krestowsky Island, in Sungai River, near Harbin, Manchuria.

MUSTELA SIBIRICA ASAII Kuroda, 1943

1943. *Mustela sibirica asaii* Kuroda, Bull. Biogeogr. Soc. Tokyo, *13*, 8: 55. Oshima Island, Izu Islands, Japan.

Mustela lutreola group

For this group, *Lutreola* Wagner, 1841, is available. It is given subgeneric rank by many authors.

Mustela lutreola Linnaeus, 1761 European Mink

Approximate distribution of species: from Western France, eastward to the Tobol and Irtish Rivers in Western Siberia; south to Austria, Hungary, Rumania and Transcaucasia; north to Finland and Northern Russia (Harper, 1945). (Bobrinskii states it ranges to Northern Caucasus only, not Transcaucasia, and quotes it also from Yugoslavia and Italy.) Distribution includes Poland.

MUSTELA LUTREOLA LUTREOLA Linnaeus, 1761

1761. *Viverra lutreola* Linnaeus, Faun. Suec. 5. Finland.
1777. *Lutra minor* Erxleben, Syst. Regn. Anim. *1:* 451. Renaming of *lutreola*.
1792. *Mustela Lutra fulva* Kerr, Anim. Kingd. 173. Renaming of *lutreola*.
(?) 1839. *Mustela lutreola* var. *alba* de Sélys Longchamps, Études Micromamm. 46, *nom. nud.*
(?) 1863. *Putorius alpinus* Ogérien, H.N. du Jura, *3:* 59. Highest portions of Jura. Not of Gebler, 1823.
1879. *Lutreola europaea* Homeyer, Zool. Garten, *20:* 184. Substitute for *lutreola*.
1912. *Mustela (Lutreola) lutreola wyborgensis* Matschie, S.B. Ges. Nat. Fr. Berlin, 347. Viborg, Finland.

Range: according to Bobrinskii, Finland, northern part of Russia as far south as Leningrad Province, Gorki, Sverdlovsk, possibly Bashkiria.

MUSTELA LUTREOLA CYLIPENA Matschie, 1912

1912. *Mustela (Lutreola) lutreola cylipena* Matschie, S.B. Ges. Nat. Fr. Berlin, 348. East Prussia.

1912. *Mustela (Lutreola) lutreola budina* Matschie, *loc. cit.* 349. Ortelsburg, East Prussia.

1912. *Mustela (Lutreola) lutreola varina* Matschie, *loc. cit.* 351. Schwerin, Mecklenburg, Germany.

1912. *Mustela (Lutreola) lutreola albica* Matschie, *loc. cit.* 351. River Levitz, tributary of Elbe, Mecklenburg, Germany.

1912. *Mustela (Lutreola) lutreola glogeri* Matschie, *loc. cit.* 354. Brieg, Silesia.

Range: Latvia, Lithuania, Germany, ? Western White Russia.

MUSTELA LUTREOLA BIEDERMANNI Matschie, 1912

1912. *Mustela (Lutreola) lutreola biedermanni* Matschie, S.B. Ges. Nat. Fr. Berlin, 353. Malicorne, South-Western France.

1912. *Mustela (Lutreola) lutreola aremorica* Matschie, *loc. cit.* 354. Near Vimont, Caen, France.

MUSTELA LUTREOLA TRANSSYLVANICA Ehik, 1932

1932. *Mustela lutreola transsylvanica* Ehik, Allat. Közlem, *29:* 142. Kovaszna, Transylvania.

1932. *Mustela lutreola hungarica* Ehik, Allat Közlem, *29:* 142. Komitate Turoc, Hungary. Not *Mustela eversmanni hungarica* Ehik, 1928.

Bobrinskii only recognizes one race from Hungary, which he quotes under the preoccupied name *hungarica* from Hungary, Rumania, Southern Germany, Yugoslavia, Italy, apparently Bessarabia.

MUSTELA LUTREOLA TUROVI "Kuznetzov & Novikov," 1939, Bobrinskii, 1944

1944. *L(utreola) l(utreola) turovi* Bobrinskii, Mamm. U.S.S.R. 127. No exact locality, "The Caucasus mink; distributed south of the proceeding form" (= *M. l. borealis*, here renamed *novikovi*). We are unable to trace any other reference to this form than that given here.

MUSTELA LUTREOLA NOVIKOVI *nom. nov.*

1939. *Lutreola lutreola borealis* Novikov, The European Mink (Leningrad), 63. Valley of the River Byonki, near Milet, Bogorodsk region, Moscow Govt., Russia. Range: Estonia, Eastern Latvia, White Russia, across central zone of European U.S.S.R. to Bashkiria, apparently as far south as the forest-steppe zone. Not *Mustela flavigula* var. *borealis* Radde, 1862.

MUSTELA LUTREOLA BINOMINATA *nom. nov.*

1939. *Lutreola lutreola caucasica* Novikov, The European Mink (Leningrad), 63. Station Prochladnaya, Northern Caucasus. Not of Barrett-Hamilton, 1900.

Mustela strigidorsa group

Referrable to *Pocockictis* Kretzoi, 1947, if further subgeneric division of the genus is required.

Mustela strigidorsa Gray, 1853 Back-striped Weasel

Approximate distribution of species: Nepal, Sikkim, Assam, Burma, Tenasserim and Indo-China.

MUSTELA STRIGIDORSA Gray, 1853

1853. *Mustela strigodorsa* Gray (Hodgson MS.), P.Z.S. 191. Sikkim.
1855. *Mustela strigidorsa* Horsfield, Ann. Mag. N.H. *16:* 107.
Range: as above.

Subgenus *PUTORIUS* Cuvier, 1817

Mustela putorius Linnaeus, 1758. European Polecat

Approximate distribution of species (as understood by Pocock, 1936): Britain, Norway, Sweden, Holland, Germany, France, Belgium, Denmark, Poland, Switzerland, south to Spain, Italy, Rumania; Finland. The greater part of Russia, north to White Sea, south to Crimea, Northern Caucasus, etc., Kazakstan and Southern Siberia as far east as the Amur region, approximately. Mongolia, and Palaearctic parts of China (southwards about to Szechuan); Tibet; Kashmir; Palestine, according to Bodenheimer; Morocco. The distribution of the Ferret is of course subject to modification by human agency.

MUSTELA PUTORIUS PUTORIUS Linnaeus, 1758

1758. *Mustela putorius* Linnaeus, Syst. Nat. 10th ed. *1*: 46. Sweden.
1785. *Mustela iltis* Boddaert, Elench. Anim. 87. Renaming of *putorius*.
1795. *Mustela furo-putorius* Link, Beytr. Naturgesch. *1:* 83.
1798. *Viverra foetens* Thunberg, Beskrifning pa Svenske Djur, 15. Renaming of *putorius*.
1801. *Mustela putorius albus* Bechstein, Gemeinn. Nat. Deutschlands, 2nd ed. *1:*782. Thuringia, Germany. Not *alba*, *loc. cit.* 759.
1827. *Putorius vulgaris* Griffith, Cuvier's Anim. Kingd. *5:* 120. Renaming of *putorius*.
(?) 1839. *Mustela putorius* var. *flavicaus* de Sélys Longchamps, Études de Micromamm. 145, *nom. nud.*
(?) 1839. *Mustela putorius* var. *vison* de Sélys Longchamps, *loc. cit.*, *nom. nud.*
1843. *Putorius foetidus* Gray, List. Spec. Mamm. B.M. 61. Renaming of *putorius*.
1851. *Putorius verus* Simashko, Russ. Fauna, *2:* 357.
1863. *Putorius infectus* Ogérien, H.N. du Jura, *3:* 59. Substitute for *putorius*.
1904. *Putorius putorius manium* Barrett-Hamilton, Ann. Mag. N.H. *13:* 390. Teufin, Apfenzell, Switzerland.
1926. *Putorius putorius stantschinskii* Melander, Wiss. Mitt. Univ. Smolensk, 137. Smolensk Govt., Russia.
(?) 1929. *Mustela putorius orientalis* Brauner, Ukr. Misl. ta Ribalka, 2–3, 8–9. No locality. Not of Ognev, 1928. (V.V.)

Range: Europe, from Scandinavia to Northern Spain and Mediterranean coast, westwards to Britain, eastwards to the Ural Mountains.

MUSTELA PUTORIUS FURO Linnaeus, 1758. Ferret

1758. *Mustela furo* Linnaeus, Syst. Nat. 10th ed. *1:* 46. "Africa."

1865. *Putorius foetidus* var. *subrufo* Gray, P.Z.S. 110. Bred in captivity. See page 252 for discussion and status.

MUSTELA PUTORIUS EVERSMANNI Lesson, 1827

1827. *Mustela eversmanni* Lesson, Man. de Mamm. 144. Between Orenburg and Bokhara, Russian Turkestan.

1842. *Mustela putorinus* Blyth, J. Asiat. Soc. Bengal, *11*, 1: 281.

(?) 1944. *M(ustela) ev(ersmanni) satunini* "Migulin, 1928," Bobrinskii, Mamm. U.S.S.R. 126. Nagaiskie steppes. We are unable to trace the reference from Migulin, 1928. Bobrinskii treats *M. eversmanni* as a distinct species.

MUSTELA PUTORIUS LARVATUS Hodgson, 1849

1849. *Putorius larvatus* Hodgson, J. Asiat. Soc. Bengal, *18:* 447. Utsang, north of Sikkim, in Southern Tibet.

1851. *Putorius tibetanus* Horsfield, Cat. Mamm. E. Ind. Co. 105. Utsang, Southern Tibet.

Range: Tibet and Kashmir. Bobrinskii considers this as a subspecies of *eversmanni.*

MUSTELA PUTORIUS AUREOLA Barrett-Hamilton, 1904

1904. *Putorius putorius aureolus* Barrett-Hamilton, Ann. Mag. N.H. *13:* 389. Ferrol, Province of Coruña, Spain.

MUSTELA PUTORIUS MICHNOI Kastschenko, 1910

1910. *Putorius eversmanni* var. *michnoi* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *15:* 271. River Kiran, 20 km. from Troizkosavsk, Transbaikalia.

1913. *Mustela lineiventer* Hollister, Proc. Biol. Soc. Washington, *26:* 2. Tchegan-Burgazi Pass, Little Altai, Siberia.

Range: Transbaikal steppes, according to Bobrinskii, who thinks it may be the same as *larvatus* and regards it as a subspecies of *eversmanni.*

MUSTELA PUTORIUS TIARATA Hollister, 1913

1913. *Mustela tiarata* Hollister, Proc. Biol. Soc. Washington, *26:* 2. Chiuningchow, 150 miles east of Lanchow, Kansu, China. Range: Mongolia, Kansu, Shansi, Szechuan. Treated as a subspecies of *eversmanni* by G. Allen.

MUSTELA PUTORIUS TALASSICA Ognev, 1928

1928. *Putorius eversmanni talassicus* Ognev, Mém. Sect. Zool. Soc. Amis. Sci. Nat. Moscou, *2:* 26, 30. Talassky Alatau (north-east of Tashkent), Russian Turkestan. (Bobrinskii gives Dzhinak Golodnaya Steppe as the locality.)

MUSTELA PUTORIUS HUNGARICA Ehik, 1928

1928. *Mustela eversmanni hungarica* Ehik, Ann. H.N. Mus. Hung. *25:* 37. Magyaróvá, Hungary.

(?) 1944. *M(ustela) ev(ersmanni) occidentalis* "Brauner, 1929," Bobrinskii, Mamm. U.S.S.R. 126. Former Kherson Govt., Russia. We are unable to trace reference from Brauner, 1929.

MUSTELA PUTORIUS AMURENSIS Ognev, 1930

1930. *Putorius eversmanni amurensis* Ognev, Okhotnik, No. 11: 25. Blagosveschensk region of Amur Basin, Eastern Siberia.

MUSTELA PUTORIUS ROTHSCHILDI Pocock, 1932

1932. *Mustela putorius rothschildi* Pocock, Scot. Nat. Edinb. 103. Malcoci, Dobrudscha, Rumania.

MUSTELA PUTORIUS ANGLIA Pocock, 1936

1936. *Putorius putorius anglius* Pocock, P.Z.S. 694. Llangammarch, Brecknockshire, Wales.

MUSTELA PUTORIUS AUREA Pocock, 1936

1936. *Putorius putorius aureus* Pocock, P.Z.S. 703. Kazan, Central Russia.

MUSTELA PUTORIUS ADMIRATA Pocock, 1936

1936. *Putorius putorius admiratus* Pocock, P.Z.S. 706. Chihfeng, Chihli, North-Eastern China.

MUSTELA PUTORIUS CALEDONIAE Tetley, 1939

1939. *Putorius putorius caledoniae* Tetley, P.Z.S. Ser. B., 37. Lochinver, Sutherland, Scotland.

Incertae sedis

Mustela vasarhelyi Kretzoi, 1942, Foldt. Kozl. Budapest, *72:* 349, new name for:
Mustela hungarica Vasarhelyi, 1942, Zool. Anz. Leipzig, *137:* 221–226; not of Ehik, 1929 (*M. eversmanni hungarica*) nor of Ehik, 1932 (*M. lutreola hungarica*). Hungary. (*N.V.*)

Genus **VORMELA** Blasius, 1884

1884. *Vormela* Blasius, Bericht der Naturforsch. Gesellsch. in Bemberg, *13:* 9. *Mustela sarmatica* Pallas = *Mustela peregusna* Guldenstaedt.

1 species: *Vormela peregusna*, page 266

Vormela peregusna Guldenstaedt, 1770 Marbled Polecat

Approximate distribution of species: Rumania, Bulgaria, Black Sea steppes, Crimea, Ciscaucasia, and Kazakstan to Western Altai foothills, Transcaucasia; Asia Minor, Palestine, Syria, Iraq, Persia, Afghanistan; Baluchistan; Mongolia.

VORMELA PEREGUSNA PEREGUSNA Güldenstaedt, 1770

1770. *Mustela peregusna* Güldenstaedt, Nov. Comm. Acad. Sci. Imp. Petrop. *14*, 1: 141. Banks of the River Don, Southern Russia.

1771. *Mustela sarmatica* Pallas, Reise Prov. Russ. Reichs, *1:* 453. Along the Volga River, Southern Russia. (According to Chaworth-Musters, Sysran; text, *loc. cit. 1:* 175.)

1935. *Vormela peregusna peregusna* natio *intermedia* Ognev, Mamm. E. Europe, N. Asia, *3:* 70. Village Starogradskaia, River Terek, Kisljar subdistrict, Terek district, Caucasus.

Range: eastwards to Western Siberia.

VORMELA PEREGUSNA ALPHERAKII Birula, 1910

1910. *Vormela sarmatica alpherakii* Birula, Ann. Mus. Zool. St. Pétersb. *15:* 333. Transcaspia, near Ashabad.

1910. *Vormela koshewnikowi* Satunin, Zool. Anz. *36:* 59. Ashabad, near Persian border, Russian Turkestan.

1910. *Vormela tedshenika* Satunin, Zool. Anz. *36:* 60. Tejen Oasis, "Oase Tedschen," Russian Turkestan.

Range: Russian Turkestan, part, Persia, Afghanistan, Baluchistan.

VORMELA PEREGUSNA NEGANS Miller, 1910

1910. *Vormela negans* Miller, Proc. U.S. Nat. Mus. *38:* 385, pl. 17. Ordos Desert (about 100 miles north of Yulinfu, Northern Shensi), Inner Mongolia. Ranges into Eastern Turkmenia, according to Bobrinskii.

VORMELA PEREGUSNA EUXINA Pocock, 1936

1936. *Vormela peregusna euxina* Pocock, P.Z.S. 718. Malcoci, Dobrudsha, Rumania.

VORMELA PEREGUSNA SYRIACA Pocock, 1936

1936. *Vormela peregusna syriaca* Pocock, P.Z.S. 720. Tiberias, Syria. Range: to Western Iraq. (Specimens in B.M. (of this race?) from Palestine.)

VORMELA PEREGUSNA ORNATA Pocock, 1936

1936. *Vormela peregusna ornata* Pocock, P.Z.S. 721. Neighbourhood of Lake Baikal, Siberia.

Genus **POECILICTIS** Thomas & Hinton, 1920

1920. *Poecilictis* Thomas & Hinton, Ann. Mag. N.H. *5:* 367. *Mustela libyca* Hemprich & Ehrenberg.

1 species: *Poecilictis libyca*, page 267

Poecilictis libyca Hemprich & Ehrenberg, 1833 Libyan Striped Weasel

Approximate distribution of species: Northern Africa, from Morocco and Algeria to Libya and Egypt, south to the Sudan and Northern Nigeria.

Some earlier authors, Trouessart included, quoted this species from Asiatic Turkey, but we have not been able to verify it as occurring in any part of Asia, and suspect these allusions were caused by confusion with some other small striped Mustelid.

POECILICTIS LIBYCA LIBYCA Hemprich & Ehrenberg, 1833

1833. *Mustela libyca* Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* k *verso*. Libya. Range includes Lower Egypt.

Poecilictis libyca vaillanti Loche, 1856

1856. *Zorilla vaillantii* Loche, Rev. Mag. Zool. *8:* 497, pl. 22. Algeria. Range includes Tunis and Morocco.

Subfamily Mellivorinae

Genus **MELLIVORA** Storr, 1780

1780. *Mellivora* Storr, Prodr. Meth. Mamm. 34, and Tab. A, Mamm. *Viverra ratel* Sparrmann = *Viverra capensis* Schreber.
1827. *Ratellus* Gray, Griffith's Cuvier Anim. Kingd. *5:* 118. *Viverra capensis* Schreber.
1836. *Ursitaxus* Hodgson, Asiat. Res. *19*: 61. *Ursitaxus inauritus* Hodgson.
1841. *Melitoryx* Gloger, Gemein. Nat. *1:* 57. *Viverra capensis* Schreber. (Type selected by Pocock, 1941, 454.)
1843. *Lipotus* Sundevall, Svenska Vet. Ak. Handl. 1842: 199. *Ursus mellivorus* Cuvier = *Viverra capensis* Schreber.

1 species: *Mellivora capensis*, page 268

Mellivora capensis Schreber, 1776 Ratel, or Honey Badger

Approximate distribution of species: Southern Turkmenia (River Atrek, Kopet-Dag, River Tedshen); Syria, Palestine, Afghanistan (according to Bobrinskii), Persia, Arabia; India, from North-West Frontier and Nepal, south to Sind, Cutch, Bengal, thence to the Madras Presidency. Morocco; Ethiopian Africa from Asben on the west, the Sudan, Abyssinia and Somaliland on the east, southwards to the Transvaal, and the Cape Province (Little Namaqualand and Uitenhage district).

(Mellivora capensis capensis Schreber, 1776. Extralimital)

1776. *Viverra capensis* Schreber, Saugeth. pl. 125, also 1777, *3*: 451. Cape of Good Hope.

Mellivora capensis indica Kerr, 1792

1792. *Ursus indicus* Kerr, Anim. Kingd. 188. India.
1830. *Ratelus mellivorus* Bennett, Gardens & Menag. Zool. Soc. Quad 1: 13. Interior of Madras.
1835. *Ratelus indicus* Burton, P.Z.S. 113. Upper Provinces of Bengal.
1851. *Mellivora ratel* Horsfield, Cat. Mamm. E. Ind. Co. 120. India.
1862. *Mellivora ratelus* Fraser, Cat. Z. Gdns. 9.

Range: Sind, Cutch, Hazaribagh, Western India, to South-Western Russian Turkestan.

Mellivora capensis inaurita Hodgson, 1836

1836. *Ursitaxus inauritus* Hodgson, Asiat. Res. *19*: 61. Muckwanpur, in foothills of Southern Nepal. Range: foothills of Southern Nepal, possibly Kumaon and North-West Frontier.

MELLIVORA CAPENSIS LEUCONOTA Sclater, 1867

1867. *Mellivora leuconota* Sclater, P.Z.S. 98, pl. 8. West Africa. Range: northwards to Southern Morocco.

MELLIVORA CAPENSIS WILSONI Cheesman, 1920

1920. *Mellivora wilsoni* Cheesman, J. Bombay N.H. Soc. *27:* 335. Ram Hormuz, 500 ft., Arabistan, South-Western Persia.

MELLIVORA CAPENSIS PUMILIO Pocock, 1946

1946. *Mellivora capensis pumilio* Pocock, P.Z.S. *115:* 314. Hadramaut, Southern Arabia.

SUBFAMILY Melinae

Genus **MELOGALE** I. Geoffroy, 1831

1831. *Melogale* I. Geoffroy, Bélanger, Voy. Zool. Indes Orient. 129 (19 March). *Melogale personata* Geoffroy.
1831. *Helictis* Gray, P.Z.S. 94 (5 August). *Helictis moschata* Gray. Valid as a subgenus.
1922. *Nesictis* Thomas, Ann. Mag. N.H. *9:* 194. *Helictis everetti* Thomas, from Borneo.

2 species in the area covered by this list:
Melogale moschata, page 270
Melogale personata, page 269

Some authors, including Pocock, have referred the Ferret-Badgers to the genus *Helictis* Gray, 1831, and either discarded *Melogale* I. Geoffroy under the impression that it dated from 1834, or used it as a subgenus of *Helictis*. But Geoffroy's name dates from 19 March 1831, a few months earlier than Gray's name of 5 August 1831. (For the date of publication of *Melogale* I. Geoffroy, see Sherborn, 1901, *Ann. Mag. N.H. 7:* 390.) Pocock (1941, 396) gave the characters of the two species and recognized no subgenus. Simpson (1945, 114) lists both *Melogale* and *Helictis* as full genera. We take a middle view, and here regard *Helictis* as a subgenus of *Melogale*.

Subgenus *MELOGALE* I. Geoffroy, 1831

Melogale personata Geoffroy, 1831 — Burmese Ferret-Badger

Approximate distribution of species: Nepal, Assam, Burma, Siam, Indo-China.

MELOGALE PERSONATA PERSONATA Geoffroy, 1831

1831. *Melogale personata* I. Geoffroy, Bélanger, Voy. Zool. Indes Orient. 137, pl. 5. Near Rangoon, Burma. Ranges to Assam, Manipur.

MELOGALE PERSONATA NIPALENSIS Hodgson, 1836

1836. *Gulo nipalensis* Hodgson, J. Asiat. Soc. Bengal, *5:* 237. Nepal.
1888. *Helictis orientalis* Blanford, Mamm. Brit. Ind. 173. Not of Horsfield, 1821.
Range: Nepal to Bhutan Duars.

MELOGALE PERSONATA PIERREI Bonhote, 1903

1903. *Helictis pierrei* Bonhote, Ann. Mag. N.H. *12:* 592. Near Saigon, Cochin-China.

MELOGALE PERSONATA LAOTUM Thomas, 1922

1922. *Melogale personata laotum* Thomas, Ann. Mag. N.H. *9:* 194. Nan, 200 m., Siam. Ranges into Indo-China (part).

MELOGALE PERSONATA TONQUINIA Thomas, 1922

1922. *Melogale tonquinia* Thomas, Ann. Mag. N.H. *9:* 195. Yen-bay, Songkoi River, Tonkin, North Indo-China. (Osgood (1932) thought this was a synonym of *laotum*.)

Subgenus *HELICTIS* Gray, 1831

Melogale moschata Gray, 1831 — Chinese Ferret-Badger

Approximate distribution of species: China, from Szechuan southwards to Yunnan, thence to Fukien and Hainan; Formosa; Assam and Burma; Indo-China.

MELOGALE MOSCHATA MOSCHATA Gray, 1831

1831. *Helictis moschata* Gray, P.Z.S. 94. Canton, Kwantung, Southern China. The range includes Yunnan and Hainan.

MELOGALE MOSCHATA SUBAURANTIACA Swinhoe, 1862

1862. *Helictis subaurantiaca* Swinhoe, P.Z.S. 355. Formosa.
1922. *Helictis subaurantiaca modesta* Thomas, Ann. Mag. N.H. *9:* 196. Bankoro, Formosa. For status, see Pocock (1941, 404).

MELOGALE MOSCHATA FERREOGRISEA Hilzheimer, 1905

1905. *Helictis ferreo-griseus* Hilzheimer, Zool. Anz. *29:* 298. Near Hankow, Hupeh, China. Range: Szechuan, Fukien and adjacent states, China. G. Allen (1938, 396) lists a specimen from Shansi—"probably not native there".

MELOGALE MOSCHATA MILLSI Thomas, 1922

1922. *Helictis millsi* Thomas, J. Bombay N.H. Soc. *28:* 432. Mokokchung, Naga Hills, 5,000 ft., Assam. Range includes Northern Burma.

MELOGALE MOSCHATA TAXILLA Thomas, 1925

1925. *Helictis taxilla* Thomas, P.Z.S. 500. Ngai-tio, Tonkin, 3,100 ft., Northern Indo-China.

Melogale (?) moschata sorella G. Allen, 1929

1929. *Helectis taxilla sorella* G. Allen, Amer. Mus. Nov. No. 358, 8. Futsing, Fukien, South-Eastern China. Not, we think, "*Helictis taxilla sorella*", as Pocock (1941, 401) shows that *taxilla* is very close to, if not identical with, *millsi*. On the other hand, G. Allen (pp. 396, 398) lists specimens of both *sorella* and *ferreogrisea* from Futsing, Fukien. Possibly, therefore, *sorella* will have to be given specific rank. See also Pocock (1941, 405).

Genus **MELES** Brisson, 1762

1762. *Meles* Brisson, Regn. Anim. 13. *Ursus meles* Linnaeus. Hopwood (1947, P.Z.S. 533–536) would disregard Brisson and date *Meles*, with type *Ursus meles* Linnaeus, from Boddaert, 1785, Elench. Anim. *1:* 45.
1795. *Taxus* Cuvier & Geoffroy, Mag. Encyclop. *2:* 187. *Ursus meles* Linnaeus.
1815. *Melesium* Rafinesque, Anal. de la Nature, 59. Renaming of *Taxus*.
1925. *Meledes* Kastschenko, Bull. Acad. Sci. Ukr. Phys.-Math. *1*, 4: 21. *Meles taxus arenarius* Satunin.

1 species: *Meles meles*, page 271

Most authors seem now to agree that there is only one valid species in this genus.

Meles meles Linnaeus, 1758 Badger

Approximate distribution of species: except that it does not occur in North Africa, essentially throughout the Palaearctic region, and in Southern China somewhat south of that region.

(In detail, British Isles, west to Ireland, Norway, Sweden, Belgium, France, Holland, Denmark, Germany, ? Switzerland, Hungary (B.M.), Poland, Spain, Italy, Crete. Widely distributed in the U.S.S.R., according to Bobrinskii the whole of Russia except the Pechora basin; Turkestan and across Siberia approximately as far north as a line from Surgut-on-Ob to Nikolaevsk-on-Amur; does not occur in Sakhalin; Chinese Turkestan, Tibet, Mongolia, Korea, Japan. Throughout the main states of China, except, evidently, Yunnan. Asia Minor, Persia and Palestine. (Tate, 1947, quotes *M. m. leucurus* from extreme Northern Burma.))

Meles meles meles Linnaeus, 1758

1758. *Ursus meles* Linnaeus, Syst. Nat. 10th ed. *1:* 48. Upsala, Sweden.
1785. *Meles taxus* Boddaert, Elench. Anim. *1:* 80. Europe.
1788. *Ursus meles alba* Gmelin, Syst. Nat. 13th ed. *1:* 102.
1788. *Ursus meles maculata* Gmelin, *loc. cit.*
1808. *Taxus vulgaris* Tiedemann, Zoologie, *1:* 376. Renaming of *Ursus meles*.
1816. *Meles europaeus* Desmarest, Nouv. Dict. H.N. *3:* 465. Renaming of *meles*.
1827. *Meles communis* Billberg, Synop. Faun. Scandinaviae, 16. Renaming of *meles*.
1827. *Meles communis caninus* Billberg, *loc. cit.* 17. Scandinavia.
1899. *Meles meles typicus* Barrett-Hamilton, Ann. Mag. N.H. *4:* 384.
1906. *Meles meles britannicus* Satunin, Mitt. Kauk. Mus. *2:* 115. Based on cranial measurements of English specimens recorded by Barrett-Hamilton, 1899, Ann. Mag. N.H. *4:* 384.

Range: from Italy, north to Scandinavia, west to Ireland, east to Russia.

MELES MELES ANAKUMA Temminck, 1844

1844. *Meles anakuma* Temminck, Fauna Japonica, Mamm. 30, pl. 6. Environs of Nagasaki and Awa, Japan. Range: Hondo, Shikoku, Kiusiu, ? Hokkaido, Japan.

MELES MELES LEUCURUS Hodgson, 1847

1847. *Taxidea leucurus* Hodgson, J. Asiat. Soc. Bengal, *16:* 763, pl. 29. Lhasa, Tibet.

MELES MELES AMURENSIS Schrenck, 1859

1859. *Meles taxus amurensis* Schrenck, Reisen Amur-Lande, 17, pl. 1, fig. 1. Amur region, not far from mouth of Ussuri River.

1891. *Meles schrenkii* Nehring, S.B. Ges. Nat. Fr. Berlin, 103. Alternative name for *amurensis*.

Range: Amur-Ussuri region, Manchuria.

MELES MELES LEPTORHYNCHUS Milne-Edwards, 1867

1867. *Meles leptorhynchus* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 374. Near Pekin, Chihli, China.

1868. *Meles chinensis* Gray, P.Z.S. 207. Amoy, China.

1907. *Meles hanensis* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 138. Hinganfu, Shensi, China.

1907. *Meles siningensis* Matschie, *loc. cit.* Siningfu, Kansu, China.

1907. *Meles tsingtauensis* Matschie, *loc. cit.* 142. Tsingtao, Shantung, China.

Range: China, including states of Chihli, Shantung, Chekiang, Kiangsu, Shansi, Shensi, Hunan, Fukien, Kansu, Szechuan.

MELES MELES CANESCENS Blanford, 1875

1875. *Meles canescens* Blanford, Ann. Mag. N.H. *16:* 310. Abadeh, between Shiraz and Isfahan, 7,000 ft., Persia.

MELES MELES ARENARIUS Satunin, 1895

1895. *Meles taxus arenarius* Satunin, Arch. Nat. *1:* 111. Ryn Peski, Astrakhan Govt., South-Eastern Russia. Range: Caucasus steppes.

MELES MELES MARIANENSIS Graells, 1897

1897. *Meles taxus* var. *marianensis* Graells, Mem. Real. Acad. Cien. Madrid, *17:* 170. Central Spain.

1899. *Meles meles mediterraneus* Barrett-Hamilton, Ann. Mag. N.H. *4:* 384. Seville, Spain.

MELES MELES SIBIRICUS Kastschenko, 1900

1900. *Meles taxus sibiricus* Kastschenko, Key to Mamm. Tomsk, table 15 (Russia), and 1901, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *6:* 611. Plains of central part of Tomsk Govt., Siberia.

MELES MELES RADDEI Kastschenko, 1901

1901. *Meles amurensis raddei* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *6:* 613. Steppes of Transbaikalia, Eastern Siberia.

MELES MELES ALTAICUS Kastschenko, 1901

1901. *Meles amurensis altaicus* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *6:* 613. Coast of Lake Telezkoi, South-Western Russian Altai.

MELES MELES MINOR Satunin, 1905

1905. *Meles meles minor* Satunin, Priroda i. Ochota, *2:* 467. (*N.V.*) 1905, Mitt. Kaukas Mus. *2:* 113 (German, 288). Borzom, Gouv. Tiflis, Transcaucasia.

MELES MELES ARCALUS Miller, 1907

1907. *Meles arcalus* Miller, Ann. Mag. N.H. *20:* 394. Lassethe Plain, Crete.

MELES MELES BLANFORDI Matschie, 1907

1907. *Meles blanfordi* Matschie, Wiss. Ergebn. Filchner Exped. to China, *10,* 1: 143. Kashgar, Chinese Turkestan.

MELES MELES TIANSCHANENSIS Hoyningen-Huene, 1910

1910. *Meles tianschanensis* Hoyningen-Huene, Zur. Biol. Estlandisch. Dachses, 63. Tianshan Mountains.

MELES MELES MELANOGENYS J. Allen, 1913

1913. *Meles melanogenys* J. Allen, Bull. Amer. Mus. N.H. *32:* 433. Musan, Northern Korea.

MELES MELES RHODIUS Festa, 1914

1914. *Meles meles rhodius* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *29:* 6. Koskino, Island of Rhodes, Eastern Mediterranean.

MELES MELES PONTICUS Blackler, 1916

1916. *Meles meles ponticus* Blackler, Ann. Mag. N.H. *18:* 75. Scalita, near Trebizond, 3,000 ft., Asia Minor.

MELES MELES CAUCASICUS Ognev, 1926

1926. *Meles meles caucasicus* Ognev, Bull. Sci. Inst. Expl. Caucasus, *1:* 50, 56. Near Vladikavkaz (Ordzhonikidze), Caucasus.

MELES MELES TAURICUS Ognev, 1926

1926. *Meles meles tauricus* Ognev, Bull. Sci. Inst. Expl. Caucasus, *1:* 51, 56. Chatyr-Dag, Beshuisk Forest, Crimea, Southern Russia.

MELES MELES TALASSICUS Ognev, 1931

1931. *Meles leptorhynchus talassicus* Ognev, Mamm. E. Europe, *2:* 478. Southern slopes of Talasski Alatau, north-east of Tashkent, Russian Turkestan.

MELES MELES HEPTNERI Ognev, 1931

1931. *Meles meles heptneri* Ognev, Mamm. E. Europe, *2:* 775. Village of Aleksandro Nevskaia, 18 km. north-west of Kisljar, Daghestan, Caucasus.

MELES MELES DANICUS Degerbol, 1933

1933. *Meles meles danicus* Degerbol, Danmarks Pattedyr i Fortiden, 574, 634. Sjaelland, Denmark.

MELES MELES SEVERZOVI Heptner, 1940

1940. *Meles meles severzovi* Heptner, Z. Säuget. *15:* 224. Region of Arkit, Chodschaata Valley, south of Tschatkal Mountains, near Lake Sarytschilek, Russian Turkestan.

Genus **ARCTONYX** F. Cuvier, 1825

1825. *Arctonyx* F. Cuvier, H.N. Mamm. *3*, pt. 51, pl. and text. *Arctonyx collaris* Cuvier.
1891. *Trichomanis* Hubrecht, Notes Leyd. Mus. *13:* 241. *Trichomanis hoevenii* Hubrecht (the Sumatran race of *A. collaris*).

1 species: *Arctonyx collaris*, page 274

Arctonyx collaris F. Cuvier, 1825 Hog-Badger

Approximate distribution of species: all the larger states of China; Sikkim Terai to Assam and Burma; Indo-China, Siam (south at least to Trang) and Sumatra.

ARCTONYX COLLARIS COLLARIS F. Cuvier, 1825

1825. *Arctonyx collaris* F. Cuvier, H.N. Mamm. *3*, pt. 51, pl. and text. Bhutan Duars, Eastern Himalayas.
1853. *Arctonyx taxoides* Blyth, J. Asiat. Soc. Bengal, *22:* 591. Assam.
1856. *Arctonyx isonyx* Horsfield (Hodgson MS.), P.Z.S. 398. Sikkim Terai.
1863. *Arctonyx collaris taraiensis* Gray, Cat. Hodgson's Coll. B.M., 2nd ed. 7. Sikkim Terai.

Range: Sikkim Terai, Bhutan Duars, Assam.

ARCTONYX COLLARIS ALBOGULARIS Blyth, 1853

1853. *Meles albogularis* Blyth, J. Asiat. Soc. Bengal, *22:* 590. Eastern Tibet. (More likely, perhaps, from Szechuan, China?)
1871. *Meles* (*Arctonyx*) *obscurus* Milne-Edwards, Rech. H.N. Mamm. 200, 202. Szechuan, China.
1911. *Arctonyx leucolaemus orestes* Thomas, Abstr. P.Z.S. 27; P.Z.S. 688. Tsingling Mountains, Shensi, 12,000 ft., China.
1922. *Arctonyx obscurus incultus* Thomas, Ann. Mag. N.H. *10:* 395. Chinteh, Anhwei (about 150 km. west of Hangchow), China.

Range: Southern China, northwards to Shensi. For status of this race (which G. Allen thought was a synonym of the typical race) see Pocock (1941, 427, 434).

ARCTONYX COLLARIS LEUCOLAEMUS Milne-Edwards, 1867

1867. *Meles leucolaemus* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 374. Near Pekin, Chihli, China.
1923. *Arctonyx leucolaemus milne-edwardsii* Lönnberg, Ann. Mag. N.H. *11:* 322. Minshan, Southern Kansu, China.

ARCTONYX COLLARIS DICTATOR Thomas, 1910

1910 *Arctonyx dictator* Thomas, Ann. Mag. N.H. *5:* 424. Lamra, Trang, Lower Siam.
(?) 1921. *Arctonyx annaeus* Thomas, Ann. Mag. N.H. *7:* 524. Nhatrang, Annam, Indo-China.

ARCTONYX COLLARIS CONSUL Pocock, 1940

1940. *Arctonyx collaris consul* Pocock, J. Bombay N.H. Soc. *41:* 465. Thaundaung, near Toungoo, 4,500 ft., Lower Burma. Range: Northern Tenasserim to Assam.

SUBFAMILY L u t r i n a e

Genus **LUTRA** Brisson, 1762

1762. *Lutra* Brisson, Regn. Anim. 13. *Mustela lutra* Linnaeus. Hopwood (1947, P.Z.S. 533–536) would disregard Brisson and date *Lutra* from Brünnich, 1771. Zool. Fundamenta, 34, 42, type *Mustela lutra* Linnaeus.
1806. *Lutris* Duméril, Zool. Analytique, 12. Modification of *Lutra*.
1815. *Lutrix* Rafinesque, Anal. de la Nature, 59. Substitute for *Lutra*.
1865. *Barangia* Gray, P.Z.S. 123. *Lutra sumatrana* Gray.
1865. *Lutrogale* Gray, P.Z.S. 127. "The species identified by Gray as *monticola* Hodgson, which is *perspicillata* Geoffroy, not *monticola* Hodgson." Valid as a subgenus.
1867. *Lutronectes* Gray, P.Z.S. 180. *Lutronectes whiteleyi* Gray = *Mustela lutra* Linnaeus.
1921. *Hydrictis* Pocock, P.Z.S. 543. *Lutra maculicollis* Lichtenstein, from South Africa. Valid as a subgenus.

3 species in the area covered by this list:
Lutra lutra, page 275
Lutra perspicillata, page 277
Lutra sumatrana, page 277

Of these, *L. sumatrana* is nearly extralimital, only touching the region now under discussion in Indo-China. *L. perspicillata* belongs to the genus or subgenus *Lutrogale*. Pocock gave this generic rank, but there seems to be too much tendency to genus-splitting in the subfamily, and we provisionally regard it as a subgenus. For characters, see Pocock (1941), in which the three species are discussed.

Subgenus *LUTRA* Brisson, 1762

Lutra lutra Linnaeus, 1758 — Common Otter

Approximate distribution of species: widely distributed in the Palaearctic region, and in the Indo-Malayan region as far as Java.

(In detail, known from British Isles, Ireland included, France, Holland, Belgium, Spain, Italy, Switzerland, Norway, Sweden, Denmark, Germany, Bohemia, Hungary, Rumania (? other countries in Europe); Poland; in the U.S.S.R., according to

Bobrinskii it is widely distributed but nearly everywhere rare; it fails to occur only in the extreme north-east of European Russia, the extreme north of Siberia, Crimea, and in a large part of Kazakstan and the lowlands of Central Asia. Chinese Turkestan, Tibet; Japan, Formosa; all the larger states of China, Chihli perhaps excepted; Hainan. Ceylon, Southern India, Kashmir to Nepal, Assam, Northern Burma; Indo-China, has been recorded from Siam. Sumatra and Java. Asia Minor (B.M.), Persia, Palestine. Morocco and Algeria.)

LUTRA LUTRA LUTRA Linnaeus, 1758

1758. *Mustela lutra* Linnaeus, Syst. Nat. 10th ed. *1:* 45. Upsala, Sweden.
1777. *Lustra vulgaris* Erxleben, Syst. Regn. Anim. *1:* 448. Renaming of *lutra*.
1792. *Mustela Lutra piscatoria* Kerr, Anim. Kingd. 172. Renaming of *lutra*.
(?) 1816. *Lutra fluviatilis* Leach, Syst. Cat. Spec. Indig. Mamm. & Birds B.M. 6, *nom. nud.*
1827. *Lutra vulgaris* var. *marinus* Billberg, Synops. Faunae Scandinaviae, 28. Coasts of Scandinavia. Not of Erxleben, 1777.
1834. *Lutra nudipes* Melchior, Den Danske Stats og Norges Pattedyr, 50. Coasts of Northern Norway.
1834. *Lutra roensis* Ogilby, P.Z.S. 111. Roe Mills, near Newton Lemavaddy, Londonderry, Ireland.
1867. *Lutronectes whiteleyi* Gray, P.Z.S. 181. Japan.
1887. *Lutra lutra* var. *japonica* Nehring, S.B. Ges. Nat. Fr. Berlin, No. 3: 22. Renaming of *whiteleyi*.
(?) 1922. *Lutra vulgaris* var. *baicalensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 349, *nom. nud.* Near Lake Baikal.
(?) 1922. *Lutra vulgaris* var. *amurensis* Dybowski, *loc. cit.* Amur, Ussuri regions, *nom. nud.*
(?) 1922. *Lutra vulgaris* var. *kamtschatica* Dybowski, *loc. cit.*, *nom. nud.* Kamtchatka.
(?) 1936. *Lutra stejnegeri* Goldman, J. Mamm. *17:* 164. Petropavlovsk, Kamtchatka.

Range: European and Siberian range of the species, and Japan (including Kuriles, Hondo, Shikoku, Kiushiu).

LUTRA LUTRA BARANG F. Cuvier, 1823

1823. *Lutra lutra barang* F. Cuvier, Dict. Sci. Nat. Paris, *27:* 246. Sumatra. Range includes Java, also Annam and Siam.

LUTRA LUTRA NAIR F. Cuvier, 1823

1823. *Lutra nair* F. Cuvier, Dict. Sci. Nat. Paris, *27:* 247. Pondicherry, India.
1837. *Lutra indica* Gray, Charlesworth's Mag. N.H. *1:* 580. Madras.
1920. *Lutra lutra ceylonica* Pohle, Arch. Naturg. *85*, 9: 72. Nuwara Eliya, Ceylon.

Range: Ceylon and Southern India (known from Coorg, Nilgiri and Palni Hills).

LUTRA LUTRA CHINENSIS Gray, 1837

1837. *Lutra chinensis* Gray, Mag. N.H. *1:* 580. Probably neighbourhood of Canton, Southern China.
1897. *Lutra sinensis* Trouessart, Cat. Mamm. 283.
(?) 1907. *Lutra hanensis* Matschie, Wiss. Ergebn. Filchner Exped. to China, *10*, 1: 150. Hsinganfu, Shensi, China.

Range: China, Hainan and Formosa.

LUTRA LUTRA MONTICOLA Hodgson, 1839

1839. *Lutra monticolus* Hodgson, J. Asiat. Soc. Bengal, *8:* 320. Nepal. Range: Punjab, Kumaon, Nepal, Sikkim, Assam.

LUTRA LUTRA AUROBRUNNEA Hodgson, 1839

1839. *Lutra aurobrunneus* Hodgson, J. Asiat. Soc. Bengal, *8:* 320. Nepal.
1865. *Barangia ? nepalensis* Gray, P.Z.S. 124. Nepal.

Range: Nepal, at high altitudes, and Garhwal.

LUTRA LUTRA KUTAB Schinz, 1844

1844. *Lutra kutab* Schinz, Syn. Mamm. 354. Kashmir. Range: to Tibet.

LUTRA LUTRA ANGUSTIFRONS Lataste, 1885

1885. *Lutra angustifrons* Lataste, Actes Soc. Linn. de Bordeaux, *39:* 168, 237. Algeria. A doubtful form; synonym of *L. l. lutra* according to Miller (1912), but available for the North African Otter if it proves racially separable.
1906. *Lutra lutra splendida* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *6:* 360. Mogador, Morocco.

LUTRA LUTRA SEISTANICA Birula, 1912

1912. *Lutra lutra seistanica* Birula, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *17:* 274. River Gilmend, Seistan, Persia.
1915. *Lutra lutra oxiana* Birula, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *19:* xxi. River Pjandsh, Pamir Mountains.

Range: includes Palestine.

LUTRA LUTRA MERIDIONALIS Ognev, 1931

1931. *Lutra lutra meridionalis* Ognev, Mamm. E. Europe, *2:* 527. Surroundings of Teheran, Northern Persia.

Lutra sumatrana Gray, 1865 Hairy-nosed Otter

Approximate distribution of species: Borneo, Banka, Sumatra, Malay States, north to Annam in Indo-China.

LUTRA SUMATRANA Gray, 1865

1865. *Barangia sumatrana* Gray, P.Z.S. 123. Sumatra. (Range as above.)

Subgenus *LUTROGALE* Gray, 1865

Lutra perspicillata Geoffroy, 1826 Smooth-coated Indian Otter

Approximate distribution of species: Sumatra, Malay States, Indo-China, possibly Western Yunnan, Burma, Assam, Nepal Terai, Sind, and southwards to Travancore in India.

LUTRA PERSPICILLATA PERSPICILLATA I. Geoffroy, 1826

1826. *Lutra perspicillata* I. Geoffroy, Dict. Class. H.N. *9:* 519. Sumatra.
1827. *Lutra simung* Lesson, Man. Mamm. 156. Sumatra.
1839. *Lutra tarayensis* Hodgson, J. Asiat. Soc. Bengal, *8:* 319. Nepal Terai.
1865. *Lutra macrodus* Gray, P.Z.S. 128. Madras (see Pocock, 1941, 294).
1879. *Lutra ellioti* Anderson, Zool. Res. Yunnan, 212. Madras, India.

Range: as in the species, excepting Sind.

LUTRA PERSPICILLATA SINDICA Pocock, 1940

1940. *Lutrogale perspicillata sindica* Pocock, J. Bombay N.H. Soc. *41:* 517. Chak, Sukkur district, Western Sind, India. Range: Indus Valley, from Bahawalpur (Northern Rajputana) to Sind.

Genus **AONYX** Lesson, 1827

1827. *Aonyx* Lesson, Man. Mamm. 157. *Aonyx delalandi* Lesson = *Lutra capensis* Schinz, the Large Small-clawed Otter of Tropical and South Africa.
1832. *Amblonyx* Rafinesque, Atlantic J. *1:* 62. *Amblonyx concolor* Rafinesque. Valid as a subgenus.
1842. *Leptonyx* Lesson, Nouv. Tabl. Regn. Anim. Mamm. *1:* 72. *Lutra leptonyx* Horsfield = *Lutra cinerea* Illiger. Not of Swainson, 1821.
1920. *Micraonyx* J. Allen, J. Mamm. *1:* 24. *Lutra cinerea* Illiger.

The name *Amblonyx* is used as a genus by Pocock (1941) and is so listed by Simpson (1945), and G. Allen (1938) treated the species as a genus under the name *Micraonyx*. However, notwithstanding the differences pointed out by J. Allen in 1920 between the small Oriental and the large Ethiopian short-clawed otters, we prefer to follow Osgood (1932, *Field Mus. N.H. Zool. 18:* 193, *et seq.*) who in a paper on Indo-Chinese Mammals lists the Oriental small-clawed Otter as *Aonyx cinerea*. Chasen (1940) includes *cinerea* in the genus *Lutra*, but the short claws of this and allied species are, in our opinion, of generic value.

1 species in Asia:

Aonyx cinerea, page 278

Subgenus *AMBLONYX* Rafinesque, 1832

Aonyx cinerea Illiger, 1815 — Oriental Small-clawed Otter

Approximate distribution of species: Southern China (Yunnan, Hainan, Fukien); Northern Burma, Assam, Sikkim, Nepal, Eastern Punjab; Nilgiri Hills and Coorg, in Peninsular India; Indo-China, Malay States, Sumatra, Java, Borneo, Palawan.

AONYX CINEREA CINEREA Illiger, 1815

1815. *Lutra cinerea* Illiger, Abh. Akad. Phys. Klasse Wiss. Berlin, *1804–11:* 90, 99. Batavia, Java.
1823. *Lutra leptonyx* Horsfield, Zool. Res. Java, pt. 7, pl. Java.

This race is probably extralimital, although used by both G. Allen for China and Osgood for Indo-China. Perhaps their specimens represented the next race.

Aonyx cinerea concolor Rafinesque, 1832
1832. *Amblonyx concolor* Rafinesque, Atlantic J. *1:* 62. Garo Hills, Assam.
1839. *Lutra indigitatus* Hodgson, J. Asiat. Soc. Bengal, *8:* 320. Nepal.
1855. *Aonyx sikimensis* Horsfield (Hodgson MS.), Ann. Mag. N.H. *16:* 109. Sikkim.
(?) 1867. *Lutra (Hydrogale) swinhoei* Gray, P.Z.S. 182. Gawkang Island, near Amoy, Southern China. See Pocock (1941, 307, footnote) on status and locality.
(?) 1920. *Amblonyx cinerea fulvus* Pohle, Arch. Nat. *85*, 9: 133. Lao Key, Tonkin, Indo-China.
Range: Himalayas to Annam ? and Southern China, west to Kulu (Eastern Punjab).

Aonyx cinerea nirnai Pocock, 1940
1940. *Amblonyx cinerea nirnai* Pocock, J. Bombay N.H. Soc. *61:* 515. Virajpet, Southern Coorg, 3,000 ft., India. Range: Southern India.

Genus **ENHYDRA** Fleming, 1822

1822. *Enhydra* Fleming, Philos. of Zool. *2:* 187. *Mustela lutris* Linnaeus.
1816. *Pusa* Oken, Lehrb. Nat. *3*, 2: 985. Not of Scopoli, 1777.
1827. *Latax* Gloger, Nova Acta Phys. Med. Acad. Caes. Leop. Carol. *13*, 2: 511. To replace *Enhydra* on the grounds that it was preoccupied by *Enhydris* Merrem, 1820.
1829. *Enydris* Fischer, Syn. Mamm. 228. Emendation of *Enhydra* Fleming.

1 species: *Enhydra lutris*, page 279

Enhydra lutris Linnaeus, 1758 Sea Otter

Approximate distribution of species: coasts of North-western North America and North-Eastern Asia. Southern Kamtchatka (where rare) and Commander Islands are the sole U.S.S.R. localities quoted by Bobrinskii. Kurile Islands.

Enhydra lutris lutris Linnaeus, 1758
1758. *Mustela lutris* Linnaeus, Syst. Nat. 10th ed. *1:* 45, Kamtchatka.
1777. *Lutra marina* Erxleben, Syst. Regn. Anim. 445, Kamtchatka.
(?) 1800. *Lutra gracilis* Bechstein, Uebers. vierf. Thiere, *2:* 408. "Statenland" (according to Hollister, 1921, *J. Mammal. 2:* 177, the southernmost island of the Kurile group is meant).
1816. *Pusa orientalis* Oken, Lehrb. Nat. *3*, 2: 986.
1827. *Lutra stelleri* Lesson, Man. Mamm. 156, Kamtchatka.
1922. *Enhydra lutris kamtschatica* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 350, *nom. nud.*

FAMILY VIVERRIDAE

Genera: *Arctictis*, page 290
Arctogalidia, page 290
Chrotogale, page 292
Cynogale, page 292
Genetta, page 283
Hemigalus, page 291
Herpestes, page 292
Ichneumia, page 298
Paguma, page 288
Paradoxurus, page 285
Prionodon, page 284
Viverra, page 280
Viverricula, page 282

This family was divided into two by Pocock, Viverridae and Herpestidae, and the former subdivided into numerous subfamilies. So far as the present region is concerned, Simpson (1945) lists four subfamilies, here retained, with genera as follows:

Subfamily VIVERRINAE
- Tribe Viverrini — *Genetta*, *Viverricula*, *Viverra*.
- Tribe Prionodontini — *Prionodon*.

Subfamily PARADOXURINAE
- Tribe Arctogalidiini — *Arctogalidia*.
- Tribe Paradoxurini — *Paradoxurus*, *Paguma*, *Arctictis*.

Subfamily HEMIGALINAE
- Tribe Hemigalini — *Hemigalus*, *Chrotogale*.
- Tribe Cynogalini — *Cynogale*.

Subfamily HERPESTINAE
- *Herpestes*, *Ichneumia*.

For the characters of the above genera see Pocock (1941). For the Indian Civets, see Pocock, 1939, *Fauna of British India*, *1:* 331, and for the Indian Mongooses, 1941, *2:* 2. For non-Indian genera see Pocock, 1933, Rarer genera of Oriental Viverridae, *P.Z.S.* 969, in which the characters of *Chrotogale* and *Cynogale* are given; also Pocock, 1919, Classification of the Mongooses, *Ann. Mag. N.H. 3:* 516 (*Herpestes*, *Ichneumia*), and Pocock, 1915, *P.Z.S.* 131, where the external characters of *Genetta* are compared with those of its immediate allies. In the 1919 paper, *Mungos* is used for forms now called *Herpestes*. A noticeable feature of the skulls of *Genetta* in the Palaearctic region compared with *Viverra* (Indian species) and *Viverricula* is that the last two have the sagittal crest strongly developed, whereas in *Genetta* it is normally weak. *Chrotogale*, with its peculiar incisors and widely open palatal foramina, seems very distinct from its nearest ally *Hemigalus*. Three of the thirteen genera listed above only just come into the region now under discussion: *Cynogale* and *Chrotogale* in Indo-China, and *Ichneumia* in Southern Arabia.

Subfamily Viverrinae

Genus **VIVERRA** Linnaeus, 1758

1758. *Viverra* Linnaeus, Syst. Nat. 10th ed. *1:* 43. *Viverra zibetha* Linnaeus.
1933. *Moschothera* Pocock, J. Bombay N.H. Soc. *36:* 441. *Viverra civettina* Blyth. Valid as a subgenus.

2 species in the area covered by this list:

Viverra megaspila, page 281
Viverra zibetha, page 281

Pocock proposed *Moschothera* as a full genus, but we regard it as being of only subgeneric status. Simpson (1945) does not mention it. According to Pocock, Robinson

and Kloss regarded *civettina* as a geographical race of *megaspila*, and we concur with that view. For a comparison of the two species here admitted, see Pocock (1939, 344). A third species, *V. tangalunga* Gray, 1832, which is near *zibetha* but smaller in size, occurs in the Malay States and Islands.

Subgenus *VIVERRA* Linnaeus, 1758

Viverra zibetha Linnaeus, 1758 Large Indian Civet

Approximate distribution of species: Southern China, from Fukien westwards to Yunnan, thence northwards to Szechuan and Southern Shensi; Hainan; Burma, westwards through Assam to Nepal; Indo-China, Siam, Malay States.

VIVERRA ZIBETHA ZIBETHA Linnaeus, 1758

1758. *Viverra zibetha* Linnaeus, Syst. Nat. 10th ed. *1:* 44. Bengal.
1830. *Viverra undulata* Gray, Spic. Zool., pt. 2, 9, pl. 8. Nepal.
1842. *Viverra orientalis* or *melanurus* Hodgson, Calcutta J.N.H. *2:* 47. Nepal.
1842. (*Viverra*) *civettoides* Hodgson, *loc. cit.* 62.

Range: Nepal, eastwards to South Kamrup in Assam.

VIVERRA ZIBETHA ASHTONI Swinhoe, 1864

1864. *Viverra ashtoni* Swinhoe, P.Z.S. 379. Suykaou, Min River, Fukien, Southern China.
1907. *Viverra filchneri* Matschie, Wiss. Ergebn. Filchner Exped. to China, *10*, 1: 192. Hinganfu, South-Eastern Shensi, China.

Range: Chinese range of the species, as given above.

VIVERRA ZIBETHA PICTA Wroughton, 1915

1915. *Viverra zibetha picta* Wroughton, J. Bombay N.H. Soc. *24:* 64. H'Kamti, 500 ft., Upper Chindwin, Northern Burma.
(?) 1927. *Viverra zibetha surdaster* Thomas, P.Z.S. 46. Xieng Khouang, Laos, Indo-China.

Range: Assam, Northern Burma, Indo-China.

VIVERRA ZIBETHA PRUINOSA Wroughton, 1917

1917. *Viverra zibetha pruinosa* Wroughton, J. Bombay N.H Soc. *24:* 64. Thaget, Little Tenasserim River, Tenasserim.
1920. *Viverra zibetha sigillata* Robinson & Kloss, Rec. Ind. Mus. *19*, 4: 176. Bang Nara, Patani, Siamese Malaya.

Range: Tenasserim to Malay Peninsula.

Subgenus *MOSCHOTHERA* Pocock, 1933

Viverra megaspila Blyth, 1862 Large-spotted Civet

Approximate distribution of species: Burma, Indo-China, Siam, Malay States, Western Ghats and Travancore in Peninsular India.

Viverra megaspila megaspila Blyth, 1862

1862. *Viverra megaspila* Blyth, J. Asiat. Soc. Bengal, *31:* 331. Prome, Lower Burma. Range: Burma, Siam, Indo-China, Malay States.

Viverra megaspila civettina Blyth, 1862

1862. *Viverra civettina* Blyth, J. Asiat. Soc. Bengal, *31:* 332. Travancore, Southern India. Considered a distinct species by Pocock (1941) and others.

Genus **VIVERRICULA** Hodgson, 1838

1838. *Viverricula* Hodgson, Ann. Mag. N.H. *1:* 152. *Civetta indica* Geoffroy (*Viverra indica* Desmarest).

1 species *Viverricula indica*, page 282

Viverricula indica Desmarest, 1817 Rasse, or Small Indian Civet

Approximate distribution of species: Southern China, from Szechuan eastwards to Fukien, also Hainan and Formosa. Ceylon, Peninsular India generally, north to Punjab, thence eastwards to Bhutan, Assam, Burma. Indo-China, Siam, Malay States, Sumatra, Java, Bali. (Introduced in Madagascar and Sokotra.)

Pocock, 1933, *J. Bombay N.H. Soc. 36:* 629-631, regarded the name *malaccensis* Gmelin, 1788, *Syst. Nat. 1:* 92, as not valid for the species. As a substitute he proposed to use the name *indica* Geoffroy, 1803, *Cat. Mamm.* 113. This name is not valid from Geoffroy, since, according to Sherborn, Geoffroy's work was never published, and this was admitted by Pocock, 1939, *Fauna of British India, Mamm. 1:* 364 (footnote), in which it was stated that Desmarest may be regarded as the author of the name. But Chasen, 1935, *J. Siam Soc. N.H. Suppl. 10:* 41, thought the name *malaccensis* should be retained.

Viverricula indica indica Desmarest, 1817

1817. *Viverra indica* Desmarest, Nouv. Dict. N.H. *7:* 170. India. Range: Southern Peninsular India.

Viverricula indica bengalensis Gray & Hardwicke, 1831

1831. *Viverra bengalensis* Gray & Hardwicke, Ill. Ind. Zool. *1*: pl. 4. Calcutta, Bengal. Range: Calcutta to Gujerat, possibly Sind.

Viverricula indica pallida Gray, 1831

1831. *Viverra pallida* Gray, Zool. Misc. *1:* 17. Probably near Canton, Kwantung, Southern China.

1907. *Viverricula hanensis* Matschie, Wiss. Ergebn. Filchner Exped. to China, *10*, 1: 196. Hankow, Southern China.

1911. *Viverricula pallida taivana* Schwarz, Ann. Mag. N.H. *7:* 637. Formosa.

Range: Szechuan, Yunnan, Fukien, etc., in Southern China; and Formosa.

VIVERRICULA INDICA DESERTI Bonhote, 1898

1898. *Viverricula malaccensis deserti* Bonhote, Ann. Mag. N.H. *1:* 120. Sambhar, Rajputana, India.

VIVERRICULA INDICA THAI Kloss, 1919

1919. *Viverricula malaccensis thai* Kloss, J.N.H. Soc. Siam, *3:* 352. Prapatom, west of Bangkok, Siam. Range: Burma, Siam, Indo-China; possibly the form listed as *V. malaccensis malaccensis* from Hainan in G. Allen, 1938, Mamm. China & Mongolia?

VIVERRICULA INDICA MAYORI Pocock, 1933

1933. *Viverricula indica mayori* Pocock, J. Bombay, N.H. Soc. *36:* 632. Maha Oya, Eastern Province, Ceylon.

VIVERRICULA INDICA WELLSI Pocock, 1933

1933. *Viverricula indica wellsi* Pocock, J. Bombay N.H. Soc. *36:* 640. Kangra, 2,000 ft., Punjab, Northern India. Range: Kangra to Kumaon.

VIVERRICULA INDICA BAPTISTAE Pocock, 1933

1933. *Viverricula indica baptistae* Pocock, J. Bombay N.H. Soc. *36:* 643. Hasimara, Bhutan Duars, India. Range: to Assam.

Genus **GENETTA** Oken, 1816

1816. *Genetta* Oken, Lehrb. Nat. *3*, 2: 1010. *Viverra genetta* Linnaeus (see page 3).
1816. *Genetta* Cuvier, Regn. Anim. *1*: 156. *Viverra genetta* Linnaeus.
1841. *Odmaelurus* Gloger, Gemeinn. Hand. u. Hilfsbuch der Nat. *1:* 72. *Viverra genetta* Linnaeus.

1 species in the area covered by this list:

Genetta genetta, page 283

This genus, several species of which occur in Ethiopian Africa, was revised by Schwarz, 1930, *Rev. Zool. Bot. Afr. 19*, 2: 276–286. Only one species enters the present region.

Genetta genetta Linnaeus, 1758 European Genet

Approximate distribution of species: France, Spain, Balearic Islands; also has been recorded from Germany, Switzerland and Belgium. Palestine, Arabia. Morocco, Algeria, Libya, Africa south of the Sahara, southwards to the Transvaal and at least to Clanwilliam in West Cape Province; east to Somaliland, and west to Senegal and Asben.

GENETTA GENETTA GENETTA Linnaeus, 1758

1758. *Viverra genetta* Linnaeus, Syst. Nat. 10th ed. *1:* 45. Spain.
1816. *Viverra Genetta hispanica* Oken, Lehrb. der Nat. *3*, 2: 1010. Ronda, Malaga, Spain.

GENETTA GENETTA GENETTA [*contd.*]

1816. *Viverra Genetta gallica* Oken, *loc. cit.* 1010, alternative name for *hispanica*, not of Kerr, 1792.
1827. *Genetta vulgaris* Lesson, Man. Mamm. 173. Renaming of *genetta*.
(?) 1830. *Genetta communis* Burnett, Quart. J. Sci. Lit. Art. *1829, 2:* 349, *nom. nud.*
1897. *Genetta melas* Graells, Mem. Real. Acad. Sci. Madrid, *17:* 175. Sierra Morena, Spain.
(?) 1905. *Genetta peninsulae* Cabrera, Bol. Real. Soc. Esp. H.N. 266. El Pardo, near Madrid, Spain.

Range: Spain.

GENETTA GENETTA AFRA F. Cuvier, 1825

1825. *Genetta afra* F. Cuvier, in Cuvier & Geoffroy, H.N. Mamm. pt. 52, pl. 195; and pt. 51, text. Barbary.
1842. *Genetta genetta barbara* H. Smith, Jardine's Nat. Library, Mamm. *35:* 171. Barbary.
1857. *Genetta bonaparti* Loche, Rev. Mag. Zool. *9*, 2: 385, pl. 13. Algeria.

Range: Western Morocco, Algeria, Tunis, Libya.

GENETTA GENETTA BALEARICA Thomas, 1902

1902. *Genetta genetta balearica* Thomas, Ann. Mag. N.H. *10:* 162. Inca, Majorca, Balearic Islands.

GENETTA GENETTA RHODANICA Matschie, 1902

1902. *Genetta rhodanica* Matschie, Verhandl. 5th Int. Zool. Congr. Berlin, 1139. Montpellier, Herault, France. Range: South-Western France.

GENETTA GENETTA GRANTI Thomas, 1902

1902. *Genetta grantii* Thomas, Ann. Mag. N.H. *10:* 487. Azraki Ravine, Haushabi, 5,200 ft., Arabia.

GENETTA GENETTA TERRAESANCTAE Neumann, 1902

1902. *Genetta terraesanctae* Neumann, S.B. Ges. Nat. Fr. Berlin, 183. Mt. Carmel, Palestine.

Genus **PRIONODON** Horsfield, 1822

1822. *Prionodon* Horsfield, Zool. Res. Java, pt. 5. *Felis gracilis* Horsfield (= *P. linsang gracilis*, from Java).
1839. *Linsang* Muller, Verh. Nat. Ges. Nederl. *1*, Taf. (3): 28. *Felis gracilis* Horsfield.
1842. *Priodontes* Lesson, Nouv. Tabl. R. Anim. 60. *Felis gracilis* Horsfield. Not of Cuvier, 1827.
1896. *Linsanga* Lydekker, Geogr. Hist. Mamm. 20. Emendation of *Linsang*.
1925. *Pardictis* Thomas, P.Z.S. 498. *Prionodon pardicolor* Hodgson. Valid as a subgenus.

2 species: *Prionodon linsang*, page 285
Prionodon pardicolor, page 285

Pocock (1939, 336) gives a key to the species. He ignores *Pardictis* which Simpson (1945) lists as a full genus, Osgood (1932) as a subgenus. We propose to follow Osgood.

Subgenus *PRIONODON* Horsfield, 1822

Prionodon linsang Hardwicke, 1821 Banded Linsang

Approximate distribution of species: Tenasserim, Malay States, Sumatra, Java, Borneo.

Prionodon linsang linsang Hardwicke, 1821

1821. *Viverra? linsang* Hardwicke, Trans. Linn. Soc. London, *13:* 236, pl. 24. Malacca.

1878. *Prionodon maculosus* Blanford, Proc. As. Soc. Bengal, 71. Bankachon, Southern Tenasserim.

Range: Tenasserim to Sumatra.

Subgenus *PARDICTIS* Thomas, 1925

Prionodon pardicolor Hodgson, 1841 Spotted Linsang

Approximate distribution of species: Nepal, Assam, Northern Burma, Indo-China.

Prionodon pardicolor pardicolor Hodgson, 1841

1841. *Prionodon pardicotor* (sic) Hodgson, Calcutta J.N.H. *2:* 57. Nepal.

1844. *Viverra perdicator* Schinz, Syn. Mamm. *1:* 366. Error for *pardicolor.*

1863. *Prionodon pardochrous* Gray, Cat. Hodgsons Coll. B.M. 4, *nom. nud.*

Ranges to Assam and Northern Burma.

Prionodon pardicolor presina Thomas, 1925

1925. *Pardictis pardicolor presina* Thomas, P.Z.S. 499. Ngai-tio, 4,800 ft., Tonkin, Indo-China. Osgood thought this was a synonym of the typical race.

Subfamily P a r a d o x u r i n a e

(as understood by Simpson, 1945)

Genus **PARADOXURUS** Cuvier, 1821

1821. *Paradoxurus* Cuvier, in Cuvier & Geoffroy, H.N. Mamm. *2*, 24: Martre des Palmiers, 5. *Paradoxurus typus* Cuvier = *Viverra hermaphrodita* Pallas.

1835. *Platyschista* Otto, Nov. Act. Acad. Caes. Leop. Carol. *17:* 1089. *Platyschista pallasii* Otto = *Viverra hermaphrodita* Pallas.

1864. *Bondar* Gray, P.Z.S. 531. *Viverra bondar* Desmarest.

1864. *Macrodus* Gray, P.Z.S. 536. *Paradoxurus macrodus* Gray = *Viverra musanga javanica* Horsfield (the Javan race of *hermaphroditus*).

3 species: *Paradoxurus hermaphroditus*, page 286
Paradoxurus jerdoni, page 288
Paradoxurus zeylonensis, page 288

Pocock retains three species as above, and compares them (1939, 380). *P. jerdoni* seems very close to *zeylonensis*, and might well be considered as a subspecies of it.

Paradoxurus hermaphroditus Pallas, 1777 Common Palm Civet, or Toddy Cat

Approximate distribution of species: Hainan and Kwantung, in Southern China; Burma and Assam westwards to Kashmir, thence southwards through Peninsular India to Ceylon; Indo-China, Siam, Malay States, Sumatra, many small adjacent islands, Java, Borneo, to Celebes, the Philippines, Timor, Ceram and the Kei Islands (perhaps introduced in some of the easternmost islands just quoted).

Paradoxurus hermaphroditus hermaphroditus Pallas, in Schreber, 1777

1777. *Viverra hermaphrodita* Pallas, in Schreber, Säugeth. *3:* 426. ? India.
1820. *Viverra nigra* Desmarest, Mamm. 208. (Not of Peale & Beauvois, 1796.) Pondicherry, India.
1821. *Paradoxurus typus* F. Cuvier & Geoffroy, H.N. Mamm. pt. 24, 5. Pondicherry.
1832. *Paradoxurus typus* var. *fuliginosus* Gray, P.Z.S. 65. Southern India.
1841. *Paradoxurus felinus* Wagner, Schreb. Säugeth. Suppl. *2:* 349. India. (Composite: composed partly of *hermaphroditus* and partly of *pallasi*.)
1885. *Paradoxurus niger* Blanford, P.Z.S. 792. Pondicherry, India.

Range: Ceylon and Southern India, as far north as the Narbada River.

Paradoxurus hermaphroditus bondar Desmarest, 1820

1820. *Viverra bondar* Desmarest, Mamm. 210. Bengal.
1832. *Paradoxurus pennantii* Gray, P.Z.S. 66. Higher Province of Bengal.
1832. *Paradoxurus crossi* Gray, P.Z.S. 67. India.
1836. *Paradoxurus hirsutus* Hodgson, Asiat. Res. *19:* 72. Nepal Terai.
1855. *Paradoxurus strictus* Horsfield (Hodgson MS.), Ann. Mag. N.H. *16:* 105. Nepal Terai.

Range: Kumaon, Nepal Terai and district.

Paradoxurus hermaphroditus pallasi Gray, 1832

1832. *Paradoxurus pallasii* Gray, P.Z.S. 67. India.
1820. *Viverra prehensilis* Desmarest, Mamm. 208, not of Kerr, 1792. Bengal.
1855. *Paradoxurus quadriscriptus* Horsfield (Hodgson MS.), Ann. Mag. N.H. *16:* 106. Nepal (Hills).
1864. *Paradoxurus nigrifrons* Gray, P.Z.S. 535. India.
1910. *Paradoxurus vicinus* Schwarz, Ann. Mag. N.H. *6:* 230. Probably Assam.

Range: Nepal, Sikkim, Assam, Upper Burma.

Paradoxurus hermaphroditus nictitatans Taylor, 1891

1891. *Paradoxurus nictitatans* Taylor, J. Bombay N.H. Soc. *6:* 429, pl. Kondmals, Orissa Division of Southern Bengal.
(?) 1829. *Paradoxurus leucopus* Ogilby, Zool. J. *4:* 301. "Probably some part of the East Indies."

PARADOXURUS HERMAPHRODITUS MINOR Bonhote, 1903

1903. *Paradoxurus minor* Bonhote, Fasc. Malay Zool. *1:* 9. Kampong Jalor, Lower Siam. According to Pocock, occurs in Tenasserim. For status of this form see Chasen, 1940, Handlist Malaysian Mamm. 95, 96.

PARADOXURUS HERMAPHRODITUS COCHINENSIS Schwarz, 1911

1911. *Paradoxurus cochinensis* Schwarz, Ann. Mag. N.H. *7:* 635. Saigon, Cochin-China.

PARADOXURUS HERMAPHRODITUS EXITUS Schwarz, 1911

1911 *Paradoxurus exitus* Schwarz, Ann. Mag. N.H. *7:* 636. Fumai, east of Canton, Kwantung, Southern China.

PARADOXURUS HERMAPHRODITUS SENEX Miller, 1913

1913. *Paradoxurus hermaphroditus senex* Miller, Smiths. Misc. Coll. *61*, 21: 3. Domel Island, Mergui Archipelago.

PARADOXURUS HERMAPHRODITUS PALLENS Miller, 1913

1913. *Paradoxurus hermaphroditus pallens* Miller, Smiths. Misc. Coll. *61*, 21: 4. Kisseraing Island, Mergui Archipelago.

PARADOXURUS HERMAPHRODITUS PUGNAX Miller, 1913

1913. *Paradoxurus hermaphroditus pugnax* Miller, Smiths. Misc. Coll. *61*, 21: 4. Sullivan Island, Mergui Archipelago.

PARADOXURUS HERMAPHRODITUS SACER Miller, 1913

1913. *Paradoxurus hermaphroditus sacer* Miller, Smiths. Misc. Coll. *61*, 21: 4. St. Matthew Island, Mergui Archipelago.

PARADOXURUS HERMAPHRODITUS PULCHER Miller, 1913

1913. *Paradoxurus hermaphroditus pulcher* Miller, Smiths. Misc. Coll. *61*, 21: 5. Clara Island, Mergui Archipelago.

PARADOXURUS HERMAPHRODITUS LAOTUM Gyldenstolpe, 1917

1917. *Paradoxurus hermaphroditus laotum* Gyldenstolpe, K. Svenska. Vet. Akad. Handl. *57*, 2: 26. Chieng Hai, North-Western Siam.

1917. *Paradoxurus birmanicus* Wroughton, J. Bombay N.H. Soc. *25:* 51. Mingun, near Sagaing, Upper Burma.

Range: Burma (Mandalay and Chindwin to Tenasserim), Siam, Indo-China and Hainan.

PARADOXURUS HERMAPHRODITUS SCINDIAE Pocock, 1934

1934. *Paradoxurus hermaphroditus scindiae* Pocock, J. Bombay N.H. Soc. *37*: 176. Guna, in Gwalior (about 40 miles north of latitude 24°), India.

PARADOXURUS HERMAPHRODITUS LANEUS Pocock, 1934

1934. *Paradoxurus hermaphroditus laneus* Pocock, J. Bombay N.H. Soc. *37:* 178, fig. 4b. Gopalpur, 5,200 ft., Kangra, Punjab.

PARADOXURUS HERMAPHRODITUS VELLEROSUS Pocock, 1934

1934. *Paradoxurus hermaphroditus vellerosus* Pocock, J. Bombay N.H. Soc. *37:* 181. Kashmir.

PARADOXURUS HERMAPHRODITUS MILLERI *nom. nov.*

1913. *Paradoxurus hermaphroditus fuscus* Miller, Smiths. Misc. Coll. *61*, 21: 3. James Island, Mergui Archipelago. Not *fuscus* Kelaart, 1852.

Paradoxurus zeylonensis Pallas, in Schreber, 1778 Golden Palm Civet

Approximate distribution of species: Ceylon.

PARADOXURUS ZEYLONENSIS Pallas, in Schreber, 1778

1778. *Viverra zeylonensis* Pallas, in Schreber, Saugeth. *3*: 451. Ceylon.
1788. *Viverra zeylanica* Gmelin, Syst. Nat. 13th ed. *1:* 89. Ceylon.
? 1822. *Paradoxurus aureus* F. Cuvier, Mém. Mus. H.N. Paris, *9:* 48, pl. 4. Locality unknown.
1852. *Paradoxurus zeylanicus* with var. *fuscus* or *montanus* Kelaart, Prodr. Faun. Zeylan. 39–40. Newera Eliya, Ceylon.

Paradoxurus jerdoni Blanford, 1885 Jerdon's Palm Civet

Approximate distribution of species: Palni Hills, Nilgiri Hills, Coorg and Travancore in Southern India.

PARADOXURUS JERDONI JERDONI Blanford, 1885

1885. *Paradoxurus jerdoni* Blanford, P.Z.S. 613, 802. Kodaikanal, Palni Hills, Southern India.

PARADOXURUS JERDONI CANISCUS Pocock, 1933

1933. *Paradoxurus jerdoni caniscus* Pocock, J. Bombay N.H. Soc. *36:* 865. Virajpet, 3,000 ft., Southern Coorg, India.

Genus **PAGUMA** Gray, 1831

1831. *Paguma* Gray, P.Z.S. *1830–31:* 95. *Gulo larvatus* Hamilton-Smith.
1837. *Ambliodon* Jourdan, C.R. Acad. Sci. Paris, *5:* 445. *Paradoxurus jourdanii* Gray (= the Malaccan race of *Paguma larvata*).

1 species: *Paguma larvata*, page 289

Pocock (1939, 416) also lists a species *P. lanigera* Hodgson, based on an "imperfect, no doubt immature" skin without skull from the "northern region of Nepal", subsequently said to be from Tingree, Tibet. If its skull is not known, presumably its generic position is not certainly known, as *Paguma* differs from *Paradoxurus* chiefly in a cranial character (the length of the palate). We propose to regard it as *incertae sedis*.

Paguma larvata Hamilton-Smith, 1827 Masked Palm Civet

Approximate distribution of species: China, from Fukien and south-east coast westwards to Yunnan, thence northwards to Szechuan, Southern Shensi and Chihli (Pekin); Hainan, Formosa. Burma and Assam westwards to Kashmir; Andaman Islands. Indo-China, Siam, Malay States, Sumatra, Borneo.

Paguma larvata larvata Hamilton-Smith, 1827

1827. *Gulo larvatus* Hamilton-Smith, Griffith's Cuvier Anim. Kingd. *2:* 281, pl. Locality unknown.

1907. *Paguma reevesi* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 183. Hing-an-fu, China.

1921. *Paguma larvata rivalis* Thomas, Ann. Mag. N.H. *8:* 618. Ichang, Hupeh, China.

Range: eastern parts of Southern China, west to Szechuan.

Paguma larvata grayi Bennett, 1835

1835. *Paradoxurus grayi* Bennett, P.Z.S. 118. India.

1836. *Paradoxurus nipalensis* Hodgson, Asiat. Res. *19:* 76. Nepal.

Range: Nepal, west to Kumaon and Garwhal.

Paguma larvata taivana Swinhoe, 1862

1862. *Paguma larvata* var. *taivana* Swinhoe, P.Z.S. 354. Formosa. Range includes Botel Tobago.

Paguma larvata tytleri Tytler, 1864

1864. *Paradoxurus tytlerii* Tytler, J. Asiat. Soc. Bengal, *33:* 188. Viper Island, Port Blair, South Andaman Island.

Paguma larvata robusta Miller, 1906

1906. *Paradoxurus robustus* Miller, Proc. Biol. Soc. Washington, *19:* 26. Trang, Lower Siam. Ranges to Tenasserim.

Paguma larvata hainana Thomas, 1909

1909. *Paguma larvata hainana* Thomas, Ann. Mag N.H. *3:* 377. Five Finger Mountains (Wuchih), Island of Hainan, Southern China.

Paguma larvata intrudens Wroughton, 1910

1910. *Paguma larvata intrudens* Wroughton, J. Bombay N.H. Soc. *19:* 793. Sima, Myitkyina, Upper Burma.

1919. *Paguma larvata vagans* Kloss, J.N.H. Soc. Siam, *3:* 73. Sikawtur, 40 miles north-west of Raheng, 1,500 ft., Siam.

1921. *Paguma larvata yunalis* Thomas, Ann. Mag. N.H. *8:* 617. Yenyuensien, Southern Szechuan, China.

Range: Szechuan, Yunnan, Northern Burma to Shan States, Siam; Laos, Annam and Tonkin, in Indo-China.

Paguma larvata wroughtoni Schwarz, 1913

1913. *Paguma grayi wroughtoni* Schwarz, Ann. Mag. N.H. *12:* 289. Gharial, near Murree, Northern Punjab, India. Range: Kumaon to Kashmir.

PAGUMA LARVATA JANETTA Thomas, 1928

1928. *Paguma leucomystax janetta* Thomas, Ann. Mag. N.H. *2:* 101. Bankachon, Southern Tenasserim.

PAGUMA LARVATA NEGLECTA Pocock, 1934

1934. *Paguma larvata neglecta* Pocock, J. Bombay N.H. Soc. *37:* 334. Mokokchung, 4,500 ft., Naga Hills, Assam. Range: low-lying districts of Nepal, Sikkim, Assam, Chin Hills and Arakan, Western Burma.

PAGUMA LARVATA NIGRICEPS Pocock, 1939

1939. *Paguma larvata nigriceps* Pocock, Fauna Brit. India, Mamm. *1:* 424. Nam Tamai, Upper Burma.

(*Incertae sedis:* see remarks above)

PAGUMA (?) LANIGERA Hodgson, 1836

1836. *Paradoxurus lanigerus* Hodgson, Asiat. Res. *19:* 79.

1841. *Paradoxurus laniger* Hodgson, J. Asiat. Soc. Bengal, *10:* 909. "Northern region of Nepal," subsequently said to be from Tingree, Tibet.

Genus **ARCTICTIS** Temminck, 1824

1824. *Arctictis* Temminck, Mon. Mamm. *1*, Tabl. Méthod, xxi. *Viverra binturong* Raffles.

1824. *Ictides* F. Cuvier, Dents Mamm. 252. *Viverra binturong* Raffles.

1 species: *Arctictis binturong*, page 290

Arctictis binturong Raffles, 1821 Binturong

Approximate distribution of species: Burma (possibly Assam, Bhutan, Nepal, Sikkim); Indo-China, Siam, Malay States, Sumatra, Java, Borneo, Palawan.

ARCTICTIS BINTURONG BINTURONG Raffles, 1821

1821. *Viverra? binturong* Raffles, Trans. Linn. Soc. London, *13:* 253. Malacca.

1916. *Arctictis gairdneri* Thomas, Ann. Mag. N.H. *17:* 270. Sai Yoke, South-Western Siam.

Ranges to Tenasserim.

ARCTICTIS BINTURONG ALBIFRONS F. Cuvier, 1822

1822. *Paradoxurus albifrons* F. Cuvier, Mém. Mus. H.N. Paris, *9:* 44, 48. Bhutan, Eastern Himalayas. Range: Upper Burma, Indo-China.

Genus **ARCTOGALIDIA** Merriam, 1897

1864. *Arctogale* Gray, P.Z.S. 542. Not *Arctogale* Kaup, 1829. *Paradoxurus trivirgatus* Gray.

1897. *Arctogalidia* Merriam, Science, *5:* 302. New name for *Arctogale* Gray, preoccupied. *Paradoxurus trivirgatus* Gray.

1 species: *Arctogalidia trivirgata*, page 291

Arctogalidia trivirgata Gray, 1832 Small-toothed Palm Civet

Approximate distribution of species: Assam, Burma, Indo-China, Siam, Malaya, Sumatra, and numerous small adjacent islands, Java, Borneo.

(Arctogalidia trivirgata trivirgata Gray, 1832. Extralimital)

1832. *Paradoxurus trivirgatus* Gray, P.Z.S. 68. Buitenzorg, Western Java.

Arctogalidia trivirgata leucotis Horsfield, 1851

1851. *Paradoxurus leucotis* Horsfield, Cat. Mamm. E. India Co. *66.* Tenasserim.
1877. *Paradoxurus prehensilis* Sclater, P.Z.S. 681, pl. 71. Not of Desmarest, 1820.

Range: Burma, Siam, Tenasserim, Kings Island, Mergui Archipelago

Arctogalidia trivirgata major Miller, 1906

1906. *Arctogalidia major* Miller, Proc. Biol. Soc. Washington, *19:* 25. Trang, Lower Siam. Occurs Laos and Tonkin, in Indo-China, according to Tate.

Arctogalidia trivirgata macra Miller, 1913

1913. *Arctogalidia macra* Miller, Smiths. Misc. Coll. *61:* 6. Domel Island, Mergui Archipelago.

Arctogalidia trivirgata millsi Wroughton, 1921

1921. *Arctogalidia millsi* Wroughton, J. Bombay N.H. Soc. *27:* 600. Mokokchung, Naga Hills, 5,000 ft., Assam.

Subfamily Hemigalinae

(As understood by Simpson, 1945)

Genus **HEMIGALUS** Jourdan, 1837

1837. *Hemigalus* Jourdan, C.R. Acad. Sci. Paris, *5:* 442. *Hemigalus zebra* Gray = *Viverra hardwickii* Gray.

1 species in the area covered by this list:

Hemigalus derbyanus, page 291

Hemigalus derbyanus Gray, 1837 Banded Palm Civet

Approximate distribution of species: Tenasserim, Malay Peninsula, Sumatra and some of the islands to the west of it, Borneo.

(Hemigalus derbyanus derbyanus Gray, 1837. Extralimital)

1837. *Paradoxurus derbyanus* Gray, Charlesworth's Mag. N.H. *1:* 579. Malay Peninsula.
(?) 1837. *Paradoxurus? zebra* Gray, *loc. cit.* No locality.

HEMIGALUS DERBYANUS INCURSOR Thomas, 1915

1915. *Hemigalus derbianus* (sic) *incursor* Thomas, J. Bombay N.H. Soc. *23:* 613. Bankachon, Victoria Province, Tenasserim.

Genus **CHROTOGALE** Thomas, 1912

1912. *Chrotogale* Thomas, Abstr. P.Z.S. 17; P.Z.S. 499. *Chrotogale owstoni* Thomas.

1 species: *Chrotogale owstoni*, page 292

Chrotogale owstoni Thomas, 1912 — Owston's Banded Civet

Approximate distribution of species: Tonkin and Laos, in Indo-China.

CHROTOGALE OWSTONI Thomas, 1912

1912. *Chrotogale owstoni* Thomas, Abstr. P.Z.S. 17; P.Z.S. 500. Yen Bai, Songkoi River, Tonkin, Indo-China.

Genus **CYNOGALE** Gray, 1837

1837. *Cynogale* Gray, P.Z.S. *1836:* 88. Mag. N.H. *1, 1837:* 579. *Cynogale bennettii* Gray.
1838. *Potamophilus* Muller, Tijdschr. Nat. Gesch. Phys. *5:* 140. *Potamophilus barbatus* Muller = *Cynogale bennettii* Gray.

1 species: *Cynogale bennetti*, page 292

Cynogale bennetti Gray, 1837 — Otter-Civet

Approximate distribution of species: Indo-China, Malay States, Sumatra, Borneo.

Pocock separated the Indo-Chinese representative as a distinct species, but until more specimens come to hand we prefer to regard this very imperfectly-known form as a subspecies.

(CYNOGALE BENNETTI BENNETTI Gray, 1837. Extralimital)

1837. *Cynogale bennettii* Gray, P.Z.S. *1836:* 88. Sumatra.

CYNOGALE BENNETTI LOWEI Pocock, 1933

1933. *Cynogale lowei* Pocock, P.Z.S. 1034, fig. Backan, 500 ft., Tonkin, Indo-China.

SUBFAMILY Herpestinae

Genus **HERPESTES** Illiger, 1811

1799. *Ichneumon* Lacepède, Tabl. Div. Ord. Gen. Mamm. 7, not of Linnaeus, 1758.
1811. *Herpestes* Illiger, Prodr. Syst. Mamm. et Avium, 135, misprint, corrected to *Herpestes*, 302. *Viverra ichneumon* Gmelin.
1822. *Mangusta* Horsfield, Zool. Res. Java, unpaged, pt. 5. *Ichneumon javanicus* Geoffroy.

1837. *Urva* Hodgson, J. Asiat. Soc. Bengal, *6:* 561. *Gulo urva* Hodgson.
1841. *Mesobema* Hodgson, J. Asiat. Soc. Bengal, *10:* 910. *Gulo urva* Hodgson.
1865. *Calogale* Gray, P.Z.S. 1864: 560. *Herpestes nepalensis* Gray = *Mangusta auropunctatus* Hodgson.
1865. *Calictis* Gray, P.Z.S. 1864: 564. *Herpestes smithii* Gray.
1865. *Taeniogale* Gray, P.Z.S. 1864: 569. *Herpestes vitticollis* Bennett.
1865. *Onychogale* Gray, P.Z.S. 1864: 570. *Cynictis maccarthiae* Gray.

"*Mungos* Cuvier & Geoffroy" of some earlier authors, but *Mungos* Cuvier & Geoffroy, 1795, Mag. Encycl. *2:* 184, is now restricted to the Banded Mongoose of Africa and its immediate allies.

8 species in the area covered by this list:

Herpestes auropunctatus, page 295
Herpestes edwardsi, page 295
Herpestes fuscus, page 297
Herpestes ichneumon, page 294
Herpestes javanicus, page 294
Herpestes smithi, page 296
Herpestes urva, page 298
Herpestes vitticollis, page 298

Pocock (1941) recognized only six species in India, regarding *auropunctatus* as a race of *javanicus*, which he said ranged from Persia through Northern India to Java. But Chasen, 1940, *Handlist Malaysian Mammals*, 103, states: "Two species of this group distinguished chiefly by size occur in the Malay Peninsula; only one can be the local representative of *javanicus*, and it appears to be the larger form. *H. auropunctatus* is the earliest name for the other association." Therefore, *auropunctatus* is given specific status here. Pocock gave measurements (1941, 34) for various extralimital races of his *javanicus*; most of these, and the Indian forms, seem to be *auropunctatus*; but possibly *exilis*, which was named from Annam, may be taken as representing *javanicus* in the region now under discussion. The remaining species, *H. ichneumon*, occurs in North Africa, Spain and Palestine, and was not dealt with by Pocock in his work on mammals of British India. So far as we can see, there are three groups of *Herpestes* Mongooses in the Palaearctic and Indian regions: *ichneumon* group (large, as judged by size of skull, neck not striped, colour grey with black tailtip; chiefly African); *vitticollis* group, about as large, but neck conspicuously striped, containing the two distinct species *vitticollis* and *urva* which are compared by Pocock (1941, 7), and the *edwardsi* group, containing five medium or small species (as judged by size of skull), three of which occur together in Ceylon, and the characters of which are dealt with by Pocock (1941, 7), but it must be added that *auropunctatus* as here understood and following Chasen averages smaller than *javanicus* as here understood. Three other species, of ıy two of which are available for examination, are listed by Chasen (1940) from the Malay region. Of these, *H. semitorquatus* is very close to *H. urva*, possibly even only a race of it, but *H. brachyurus* is quite distinct, with the tail proportionately shorter than is usual in the other species, and with no neckstripes.

Herpestes ichneumon group

Herpestes ichneumon Linnaeus, 1758 Egyptian Mongoose, or Ichneumon

Approximate distribution of species: Spain and Portugal; Palestine; Morocco, Algeria, Egypt; Ethiopian Africa, from Kenya and Nigeria south to South-West Africa, Transvaal, Natal and Knysna in Cape Province.

Herpestes ichneumon ichneumon Linnaeus, 1758

1758. *Viverra ichneumon* Linnaeus, Syst. Nat. 10th ed. *1:* 43. Egypt "ad ripas Nili".
1799. *Ichneumon pharaon* Lacepède, Tabl. Div. Ord. Gen. Mamm. 7.
1808. *Ichneumon aegyptiae* Tiedemann, Zool. *1:* 364.
1818. *Ichneumon major* E. Geoffroy, Descript. Egypte, *2:* 139 (footnote). Egypt.

Range: Egypt and Palestine.

Herpestes ichneumon numidicus F. Cuvier, 1834

1834. *Ichneumon numidicus* Cuvier, H.N. Mamm. pt. 68, pl. 191, and text. Algeria.

Range: Northern Morocco, Algeria.

Herpestes ichneumon widdringtoni Gray, 1842

1842. *Herpestes widdringtonii* Gray, Ann. Mag. N.H. *9,* 1: 50. Sierra Morena, Spain.
1909. *Herpestes ichneumon* var. *ferruginea* Seabra, Bull. Soc Portugaise. Sci. Nat. *2:* 286. Alemtejo, Portugal. Not of Blanford, 1874.
1909. *Herpestes ichneumon* var. *dorsalis* Seabra, *loc. cit.* Ribatejo, Portugal.
1909. *Herpestes ichneumon* var. *grisea* Seabra, *loc. cit.* Ribatejo, Portugal. Not of Geoffroy, 1818.
1912. *Mungos widdringtonii* Miller, Cat. Mamm. W. Europe, 441.

Range: Spain and Portugal.

Herpestes ichneumon sangronizi Cabrera, 1924

1924. *Herpestes ichneumon sangronizi* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *24:* 217. Mogador, Morocco.

Herpestes edwardsi group

Herpestes javanicus Geoffroy, 1818 Javan Mongoose

Approximate distribution of species: ? Indo-China, Siam, Malay States, Java.

(Herpestes javanicus javanicus Geoffroy, 1818. Extralimital)

1818. *Ichneumon javanicus* E. Geoffroy, Descr. Egypte, *2:* 139. Western Java.

Herpestes (?) javanicus exilis Gervais, 1841

1841. *Herpestes exilis* Gervais, Voy. Bonite, *1:* 32, pl. 3, figs. 7–9. Tourane, Annam, Indo-China.
(?) 1861. *Herpestes rutilus* Gray, P.Z.S. 136. Cambodia, Indo-China.

Herpestes javanicus peninsulae Schwarz, 1910

1910. *Mungos exilis peninsulae* Schwarz, Ann. Mag. N.H. *6:* 231. Bangkok, Siam.
1917. *Mungos incertus* Kloss, J. Fed. Malay States Mus. *7:* 125. Ongut, Trang, Lower Siam.

Range: Siam, Malay Peninsula.

Herpestes auropunctatus Hodgson, 1836 Small Indian Mongoose

Approximate distribution of species: ? Northern Arabia, Persia, Iraq, Afghanistan; Kashmir, south to Gujerat, Sind and Orissa, east to Nepal, Assam and Burma; Hainan; Siam, Malay States.

Herpestes auropunctatus auropunctatus Hodgson, 1836

1836. *Mangusta auropunctata* Hodgson, J. Asiat. Soc. Bengal, *5:* 235. Nepal.
1837. *Herpestes nepalensis* Gray, Charlesw. Mag. N.H. *1:* 578. Northern India.

Range: Kashmir to Manipur and Orissa.

Herpestes auropunctatus pallipes Blyth, 1845

1845. *Mangusta pallipes* Blyth, J. Asiat. Soc. Bengal, *14:* 346. Kandahar, Afghanistan.
1864. *Herpestes persicus* Gray, P.Z.S. 554. Mohammerah, Western Persia.
1914. *Mungos auropunctatus helvus* Ryley, J. Bombay N.H. Soc. *22:* 661. Deesa, Palanpur, Gujerat, India.

Range: Iraq and perhaps Northern Arabia, Afghanistan, Persia, ? Baluchistan, Sind, Punjab, Palanpur, in Western India.

Herpestes auropunctatus birmanicus Thomas, 1886

1886. *Herpestes auropunctatus birmanicus* Thomas, Ann. Mag. N.H. *17:* 84. Pegu, Burma. Range: Burma, from Toungoo to Tenasserim.

Herpestes auropunctatus rubrifrons J. Allen, 1909

1909. *Mungos rubrifrons* J. Allen, Bull. Amer. Mus. N.H. *26:* 240. Mount Wuchih, Island of Hainan, Southern China.
1941. (*H. javanicus*) *nigrifrons* Pocock, Fauna Brit. India, Mamm. *2:* 34. (? lapse for *rubrifrons*.)

Range: Hainan and possibly Kwantung, Southern China.

Herpestes auropunctatus siamensis Kloss, 1917

1917. *Mungos siamensis* Kloss, J.N.H. Soc. Siam, *2:* 215. Muang Prae, Northern Siam.

Herpestes edwardsi Geoffroy, 1818 Indian Grey Mongoose

Approximate distribution of species: Arabia, Persia, Iraq, Afghanistan (Pocock); Baluchistan, North-West Frontier, southwards over Peninsular India to Ceylon; Nepal and Assam. (Introduced Malay States.)

HERPESTES EDWARDSI EDWARDSI Geoffroy, 1818

1818. *Ichneumon edwardsii* E. Geoffroy, Descr. Egypte, *2:* 139. "East Indies" (Madras, Pocock, 1933).
1818. *Ichneumon griseus* Geoffroy, *loc. cit.* 157.
1823. *Herpestes frederici* Desmarest, Dict. Sci. Nat. *29:* 60. Malacca.
1829. *Mangusta malaccensis* Fischer, Syn. Mamm. 164. Malacca.
(?) 1841. *Herpestes pallidus* Wagner, Schreb. Säugeth. Suppl. *2:* 311.
1841. *Herpestes ponticeriana* Gervais, Voy. de la Bonite, *1:* 32. Pondicherry, India.
1915. *Mungos mungo ellioti* Wroughton, J. Bombay N.H. Soc. *24:* 52. Dharwar, India. Not of Blyth, 1851.
1921. *Herpestes edwardsi carnaticus* Thomas, J. Bombay N.H. Soc. *28:* 23. Dharwar, India.

For use of the name *edwardsi* instead of *mungo* see Wroughton, 1921, J. Bombay N.H. Soc. *27:* 547.

Range: Peninsular India, south of the Narbada River, from Ratnagiri to Travancore and Madura; Eastern Ghats (Pocock).

HERPESTES EDWARDSI NYULA Hodgson, 1836

1836. *Mangusta (Herpestes) nyula* Hodgson, J. Asiat. Soc. Bengal, *5:* 236. Nepal (lowlands).
1915. *Mungos mungo moerens* Wroughton, J. Bombay N.H. Soc. *24:* 52. Ganoor, Nimar, India.

Range: Northern India, from Nepal to Assam, north of the Ganges; and from Cutch to Bengal, south of that river.

HERPESTES EDWARDSI FERRUGINEUS Blanford, 1874

1874. *Herpestes ferrugineus* Blanford, P.Z.S. 661, pl. 81. Larkhana, Sind, India.
1884. *Herpestes andersoni* Murray, Vert. Zool. of Sind, 34. Kotree, Sind.
1914. *Mungos mungo pallens* Ryley, J. Bombay N.H. Soc. *22:* 660. Palanpur, Northern Gujerat, India.
1936. *Herpestes griseus montanus* Bechthold, Z. Säug. *11:* 149. Hazara, Northern India.

Range: Desert districts of North-Western India in valley of the Indus and Sutlej, and in Rajputana, westwards to Baluchistan, Persia, Iraq and Arabia.

HERPESTES EDWARDSI LANKA Wroughton, 1915

1852. *Herpestes griseus* Kelaart, Prodr. Faun. Zeyl. 41. Not of Geoffroy, 1818.
1888. *Herpestes mungo* Blanford, Mamm. Brit. India, 123, in part, not of Gmelin, 1788.
1915. *Mungos lanka* Wroughton, J. Bombay N.H. Soc. *24:* 53. Cheddikulam, 177 ft., North Province, Ceylon.

Herpestes smithi Gray, 1837 Ruddy Mongoose

Approximate distribution of species: from Rajputana and Bengal southwards to Ceylon.

Herpestes smithi smithii Gray, 1837

1837. *Herpestes smithii* Gray, Charlesw. Mag. N.H. *1:* 578. Said to be from near Bombay, India.

(?) 1839. *Herpestes thysanurus* Wagner, Münch. Gel. Anz. *9*, 184: 439. Kashmir.

1851. *Herpestes ellioti* Blyth, J. Asiat. Soc. Bengal, *20:* 162. The Carnatic, India.

1852. *Herpestes torquatus* Kelaart, Prodr. Faun. Zeyl. 44, *nom. nud.* ? Southern India.

1864. *Herpestes jerdonii* Gray, P.Z.S. 550. Madras.

1867. *Herpestes monticolus* Jerdon, Mamm. Ind. 135. Inland from Nellore, India.

1921. *Herpestes smithii rusanus* Thomas, J. Bombay N.H. Soc. *28:* 25. Sambhar, Rajputana, India.

1921. *Herpestes smithii canens* Thomas, J. Bombay N.H. Soc. *28:* 25. Mt. Abu, Rajputana, India.

Range: Rajputana, east to Bengal, southwards through Eastern and Western Ghats.

Herpestes smithi zeylanius Thomas, 1921

1921. *Herpestes smithii zeylanius* Thomas, J. Bombay N.H. Soc. *28:* 24. Mankeni, East Province, Ceylon.

1852. *Herpestes rubiginosus* Kelaart, Prodr. Faun. Zeyl. 43, not of Wagner, 1841.

Herpestes fuscus Waterhouse, 1838 Indian Brown Mongoose

Approximate distribution of species: Southern India and Ceylon.

Herpestes fuscus fuscus Waterhouse, 1838

1838. *Herpestes fusca* Waterhouse, P.Z.S. 55. India. Range: Southern India, typically in the hills, from 3,000 ft. to nearly 6,000 ft. (Pocock). Specimens quoted from Nilgiri Hills, Palni Hills, Coorg, Madura, Travancore.

Herpestes fuscus flavidens Kelaart, 1850

1850. *Herpestes flavidens* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 209 (323 of 1887 reprint). Kandy, Ceylon.

1851. *Herpestes fulvescens* Kelaart, J. As. Soc. Bengal, *20:* 162. Kandy, Ceylon.

(?) 1887. *Herpestes ceylanicus* Nevill, Taprobanian, *1:* 62. Trincomalee, Ceylon.

1924. *Herpestes flavidens ceylonicus* Thomas, Ann. Mag. N.H. *13:* 240. (for *ceylanicus* Nevill.)

1924. *Herpestes flavidens phillipsi* Thomas, Ann. Mag. N.H. *13:* 240. Mousakande Estate, Gammaduwa, Central Province, Ceylon.

Range: throughout the mountainous districts of the Central Province of Ceylon to over 6,000 ft., westwards to the coast near Colombo in the wet zone, and eastward to Uva in the dry zone; also Trincomalee.

Herpestes fuscus maccarthiae Gray, 1851

1851. *Cynictis maccarthiae* Gray, P.Z.S. 131, pl. 31. Jaffna, northern point of Ceylon.

Herpestes fuscus siccatus Thomas, 1924

1924. *Herpestes flavidens siccatus* Thomas, Ann. Mag. N.H. *13:* 240. Possibly Aripo, near Mannar, North Province, Ceylon.

HERPESTES FUSCUS RUBIDIOR Pocock, 1937

1937. *Herpestes fuscus rubidior* Pocock, J. Bombay N.H. Soc. *39:* 233. Anasigalla, Matugama, West Province, Ceylon. Range: South-Western Ceylon.

Herpestes vitticollis group

Herpestes vitticollis Bennett, 1835 Striped-necked Mongoose

Approximate distribution of species: Western Ghats, Coorg, Travancore, etc., in Southern India and Ceylon.

HERPESTES VITTICOLLIS VITTICOLLIS Bennett, 1835

1835. *Herpestes vitticollis* Bennett, P.Z.S. 67. Travancore, India.
1841. *Crossarchus rubiginosus* Wagner, Schreb. Säugeth. Suppl. *2:* 329. "East Indies."
Range: Western Ghats, Coorg, Travancore; and Ceylon.

HERPESTES VITTICOLLIS INORNATUS Pocock, 1941

1941. *Herpestes vitticollis inornatus* Pocock, Fauna Brit. India, Mamm. *2:* 49. Chipgeri, North Kanara, India.

Herpestes urva Hodgson, 1836 Crab-eating Mongoose

Approximate distribution of species: Fukien and Hainan, Southern China; Formosa; Nepal, Assam, Burma; Indo-China, south to Peninsular Siam.

HERPESTES URVA Hodgson, 1836

1836. *Gulo urva* Hodgson, J. Asiat. Soc. Bengal, *5:* 238. Nepal.
(?) 1830. *Viverra fusca* Gray, Ill. Ind. Zool. *1*, pl. 5 (see Pocock, 1937, J. Bombay N.H. Soc. *39:* 237).
1837. *Urva cancrivora* Hodgson, J. Asiat. Soc. Bengal, *6:* 561–4. Nepal.
1907. *Urva hanensis* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 190. Hankow, China.
1936. *Herpestes urva annamensis* Bechthold, Z. Säugeth. *11:* 150. Phu Qui, Annam, Indo-China.
1936. *Herpestes urva formosanus* Bechthold, *loc. cit.* 151. Formosa.
1936. *Herpestes urva sinensis* Bechthold, *loc. cit.* 152. Kwantung, Southern China.
Range: as under the species above.

Genus **ICHNEUMIA** I. Geoffroy, 1837

1835. *Lasiopus* I. Geoffroy, in Gervais's Résumé des Leçons de Mamm. professées au Mus. Paris, *1:* 37. *Herpestes albicaudus* G. Cuvier. Not *Lasiopus* Dejean, 1833.
1837. *Ichneumia* I. Geoffroy, Ann. Sci. Nat. Zool. *8:* 251. New name to replace *Lasiopus*, preoccupied.

1 species: *Ichneumia albicauda*, page 298

Ichneumia albicauda G. Cuvier, 1829 White-tailed Mongoose

Approximate distribution of species: Southern Arabia; Ethiopian Africa, from Senegal to the Sudan and Somaliland, southwards to South-West Africa, the Transvaal, Natal, and Albany district, Eastern Cape Province.

Ichneumia albicauda albicauda G. Cuvier, 1829

1829. *Herpestes albicaudus* G. Cuvier, Règne Anim. ed. 2, *1:* 158. Senegal.
1833. *Herpestes leucurus* Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* h, pl. 12. Dongola, Sudan.

Range: to Muscat district of Arabia. "I have no good reason for separating the Arabian specimens from the Sudan ones in spite of their geographical separation" (Morrison-Scott, 1939, Nov. Zool. *41:* 198).

FAMILY HYAENIDAE

Genus: *Hyaena*, page 299

Genus **HYAENA** Brisson, 1762

1762. *Hyaena* Brisson, Regn. Anim. ed. 2, 13 and 168. *Canis hyaena* Linnaeus. Hopwood, 1947, P.Z.S. *117:* 533–536, would disregard Brisson and date *Hyaena* from Brünnich, 1771, Zool. Fundamenta, 34, 42, 43, with type *Canis hyaena* Linnaeus.
1868. *Euhyaena* Falconer, Palaeontol. Memoirs, *2:* 464. *Canis hyaena* Linnaeus.

1 species in the area covered by this list:

Hyaena hyaena, page 299

Hyaena hyaena Linnaeus, 1758 Striped Hyaena

Approximate distribution of species: Transcaucasia (on west coast of Caspian Sea, as far north as Derbent and Dashlagar), Southern Russian Turkestan, Kopet-Dag, Tedshen and Atrek valleys, south of Usbekistan, south-east of Tadjikistan; Persia, Iraq, Syria, Palestine, Arabia; also, according to Bobrinskii, Afghanistan and Asia Minor; Kashmir to Nepal Terai, Baluchistan, Sind and Cutch, southwards about to Nilgiri Hills (perhaps further); Morocco, Algeria, Egypt, Libya; south of the Sahara, from Asben, Somaliland, Sudan and Kenya.

Hyaena hyaena hyaena Linnaeus, 1758

1758. *Canis hyaena* Linnaeus, Syst. Nat. 10th ed. *1:* 40. Benna Mountains, Laristan, Southern Persia.
1777. *Hyaena striata* Zimmermann, Spec. Zool. Geogr. 366. Renaming of *hyaena* Linnaeus. Unavailable—Bull. Zool. Nomencl. 1950, *4:* 547.
1780. *Hyena striata* Zimmerman, Geogr. Gesch. *2:* 256.
1808. *Hyaena orientalis* Tiedemann, Zool. 350. Renaming of *hyaena* Linnaeus.
1820. *Hyaena fasciata* Thunberg, Sv. Vet. Akad. Handl. *1:* 59. Renaming of *hyaena* Linnaeus.
1820. *Hyena antiquorum* Temminck, Ann. Gen. Sci. Phys. *3:* 51. Renaming of *hyaena* Linnaeus.

HYAENA HYAENA HYAENA [*contd.*]

1840. *Hyaena virgata* Ogilby, in Royle, Illustr. Bot. Himalaya, lxvi. Renaming of *hyaena* Linnaeus.

1844. *Hyaena vulgaris indica* Blainville. Ostéogr. Mamm. 2, Hyènes, 82 and expl. of pl. 6. India.

? 1905. *Hyaena bokcharensis* Satunin, Mitt. Kauk. Mus. *2:* 8. Bokhara, Russian Turkestan.

? 1905. *Hyaena bilkiewiczi* Satunin, Mitt. Kauk. Mus. *2:* 9. Ashabad, Russian Turkestan.

1905. *Hyaena vulgaris zarudnyi* Satunin, Mitt. Kauk. Mus. *2:* 14, 19. Karun River, South-Western Persia.

1910. *Hyaena* (*Hyaena*) *vulgaris satunini* Matschie, S.B. Ges. Nat. Fr. Berlin, 363. Transcaucasia.

Range: Russian, Indian range of species, Persia, Iraq.

HYAENA HYAENA VULGARIS Desmarest, 1820

1820. *Hyaena vulgaris* Desmarest, Encyclop. Méth. Mamm. 215. ? Egypt.

HYAENA HYAENA BARBARA Blainville, 1844

1844. *Hyaena vulgaris barbara* Blainville, Ostéogr. Mamm. *Hyaena*, pls. 2 and 6. Oran, Western Algeria.

1853. *Hyaena guilla* Filippi, Mem. R. Accad. Torino, *13*, 2: 131. Locality unknown.

HYAENA HYAENA SYRIACA Matschie, 1900

1900. *Hyaena syriaca* Matschie, S.B. Ges. Nat. Fr. Berlin, 54–57. Antiochia, Syria.

HYAENA HYAENA SULTANA Pocock, 1934

1934. *Hyaena hyaena sultana* Pocock, Ann. Mag. N.H. *14:* 636. Mt. Qara, 1,500 ft., Ain, South-Eastern Arabia.

FAMILY FELIDAE

Genera: *Acinonyx*, page 320
Felis, page 301
Neofelis, page 314
Panthera, page 315

Pocock split the Cats into many genera. However, the consensus of opinion is overwhelmingly in favour of referring most or all Cats except *Acinonyx* to the Linnean genus *Felis*, or at least of recognizing as few genera as possible in this family. Simpson (1945, 119, 231) retains *Felis*, *Panthera* and *Acinonyx*, with many subgenera of the first two. As this author points out, "the work of Pocock, Sountag, Haltenorth, and others, shows beyond serious doubt that the most distinctive group of species sometimes included in *Felis*, *sensu lato*, is that typified by the so-called big Cats, Lion, Tiger, Panther, etc., the prior name for which is *Panthera*. This seems to be a good genus by any modern standards". We fully support these remarks. Pocock divided the Cats into three subfamilies, Felinae, Pantherinae and Acinonychinae, which correspond

roughly to the three living genera *Panthera*, *Felis* and *Acinonyx* of Simpson. The genus or subgenus *Neofelis* was placed in the Felinae by Pocock, but in the genus *Panthera* by Simpson. Judging by Pocock's figures and remarks, it is a thoroughly distinct type, and we are venturing to list it as a full genus. Otherwise, we follow Simpson in principle, and Pocock in details of synonymy as regards various groups which he considers of generic rank (= subgeneric rank of Simpson). It may be added that the subgenera of *Felis sensu lato* are most useful in indicating the approximate position of a species within this large genus.

Genus **FELIS** Linnaeus, 1758

1758. *Felis* Linnaeus, Syst. Nat. 10th ed. *1:* 41. *Felis catus* Linnaeus, the domestic cat.
1792. *Lynx* Kerr, Anim. Kingd. Cat. Mamm. Nos 288–299. *Felis lynx* Linnaeus. Valid as a subgenus.
1821. *Lynceus* Gray, London Med. Repos. *15:* 302. *Felis lynx* Linnaeus.
1829. *Pardina* Kaup, Entw. Gesch. u. Nat. Syst. Europ. Thierwelt, *1:* 53, 57. *Felis pardina* Temminck.
1834. *Lynchus* Jardine, Nat. Libr. Mamm. *4:* 274. *Felis lynx* Linnaeus.
1841. *Otocolobus* Brandt, Bull. Acad. Sci. St. Pétersb. *9:* 38. *Felis manul* Pallas. Valid as a subgenus.
1843. *Chaus* Gray, List. Mamm. B.M. 44. *Felis chaus* Güldenstaedt.
1843. *Caracal* Gray, List. Mamm. B.M. 46. *Caracal melanotis* Gray = *Felis caracal* Schreber. Valid as a subgenus.
1855. *Catus* Fitzinger, Wiss. pop. Nat. der Säugeth. *1:* 265. *Felis catus* Linnaeus.
1858. *Profelis* Severtzov, Rev. Mag. Zool. *10:* 386. *Felis celidogaster* Severtzov = *Felis aurata* Temminck (the West African Golden Cat). Valid as a subgenus.
1858. *Catolynx* Severtzov, Rev. Mag. Zool. *10*: 387. *Felis chaus* Güldenstaedt (restricted by Satunin, 1905).
1858. *Prionailurus* Severtzov, Rev. Mag. Zool. *10:* 387. *Felis pardochrous* Hodgson = *Leopardus horsfieldii* Gray (a race of *Felis bengalensis* Kerr). Valid as a subgenus.
1858. *Zibethailurus* Severtzov, Rev. Mag. Zool. *10:* 387. *Felis viverrinus* Bennett.
1858. *Catopuma* Severtzov, Rev. Mag. Zool. *10:* 387. *Felis moormensis* Hodgson = *Felis temminckii* Vigors & Horsfield.
1858. *Pardofelis* Severtzov, Rev. Mag. Zool. *10:* 387. *Felis marmorata* Martin. Valid as a subgenus.
1858. *Ictailurus* Severtzov, Rev. Mag. Zool. *10:* 387. *Felis planiceps* Vigors & Horsfield. Valid as a subgenus.
1858. *Urolynchus* Severtzov, Rev. Mag. Zool. *10:* 389. *Felis caracal* Schreber.
1858. *Leptailurus* Severtzov, Rev. Mag. Zool. *10:* 389. *Felis serval* Schreber. Valid as a subgenus.
1858. *Chrysailurus* Severtzov, Rev. Mag. Zool. *10:* 389. *Felis neglecta* Gray = *Felis aurata* Temminck.
1864. *Serval* Brehm, Führer Z. Garten Hamburg, 6th ed. 53. *Serval maculatus* Brehm. (*N.V.*)
1866. *Galeopardus* Heuglin & Fitzinger, S.K. Akad. Wiss. Wien. Math. Nat. Cl. *54*, 1: 557. *Felis serval* Schreber.
1867. *Viverriceps* Gray, P.Z.S. 268. *Felis viverrinus* Bennett.

FELIS [*contd.*]

1867. *Cervaria* Gray, P.Z.S. 276. *Lyncus pardinus* = *Felis pardina* Temminck. Not of Walker, 1866.
1869. *Ailurogale* Fitzinger, S.B. Ak. Berlin, *60*, 1: 249. *Felis planiceps* Vigors & Horsfield.
1870. *Ailurinus* Gervais, Nouv. Arch. Mus. Paris, *6:* 159. Naming of "l'Ailurin" Gervais, 1855, H.N. Mamm. *2:* 87 (= *Felis planiceps* Vigors & Horsfield).
1874. *Pyrofelis* Gray, Ann. Mag. N.H. *14:* 354. *Felis temminckii* Vigors & Horsfield.
1885. *Ailurina* Trouessart, Bull. Soc. Angers, *14:* Suppl. 100. Naming of "l'Ailurin" Gervais, 1855, H.N. Mamm. *2:* 87 (= *Felis planiceps* Vigors & Horsfield).
1894. *Servalina* Grevé, Nova Acta Acad. Caes. Leop. Carol., Halle, *63:* 76. *Felis serval* Schreber.
1898. *Oncoides* Trouessart, Cat. Mamm. *1:* 357. Not of Severtzov, 1858.
1903. *Eucervaria* Palmer, Science, N.S. *17:* 873. Substitute for *Cervaria* Gray.
1905. *Trichaelurus* Satunin, Ann. Mus. Zool. St. Pétersb. *9:* 495. Proposed as a substitute for *Otocolobus* which was thought to be preoccupied. See Pocock, 1939, Fauna Brit. India, *1:* 315.
1925. *Poliailurus* Lönnberg, Arkiv. Zool. Stockholm, *18A*, 2: 2. *Felis pallida* Buechner = *Felis bieti* Milne-Edwards.
1926. *Microfelis* Roberts, Ann. Transvaal Mus. *11:* 250. *Felis nigripes* Burchell, from South Africa.
1926. *Eremaelurus* Ognev, Ann. Mus. Zool. Leningrad, *27:* 356 *Eremaelurus thinobius* Ognev (a race of *Felis margarita* Loche).
1932. *Badiofelis* Pocock, P.Z.S. 749. *Felis badia* Gray, from Borneo. Valid as a subgenus.

14 species in the area covered by this list:

Felis bengalensis, page 312	*Felis margarita*, page 307
Felis bieti, page 306	*Felis marmorata*, page 311
Felis caracal, page 310	*Felis rubiginosa*, page 314
Felis chaus, page 306	*Felis serval*, page 311
Felis libyca, page 304	*Felis silvestris*, page 303
Felis lynx, page 308	*Felis temmincki*, page 311
Felis manul, page 308	*Felis viverrina*, page 314

Pocock, 1939, *Fauna of British India, Mamm. 1*, keys ten of these species in some detail. In that work he adopted the name *constantina* for the smaller species currently known as *F. libyca*, but later came to the conclusion that *constantina* is based on a race of *F. serval*, which he shows to occur in Algeria, and therefore he reverted to the name *libyca* for the small African Wild Cat. In his *Catalogue of the genus Felis* (1951) he compares in detail three of the Palaearctic species, *silvestris*, *bieti* and *margarita* (none of which occur in India), with their nearest allies. For the characters of *F.* (*Leptailurus*) *serval*, see Pocock, 1917, *Ann. Mag. N.H. 20:* 329–350, Classification of the existing Felidae.

The arrangement of the species *silvestris*, *libyca*, *bieti*, *margarita* here adopted follows that of Pocock, Catalogue of the genus *Felis*.

The nine subgenera here listed follow Pocock as far as their content of species is concerned. That author gave them all generic rank. In the above generic synonymy extralimital American names have not been dealt with.

Subgenus *FELIS* Linnaeus, 1758

Pocock regards the following names as synonyms of *Felis catus* Linnaeus, 1758, the domestic cat:

1837. *Felis pulchella* Gray, Mag. N.H. *1:* 577, Egypt, and *inconspicua*, *loc. cit.* Nepal.
1904. *Felis daemon* Satunin, P.Z.S. *2:* 162. Caucasus.
1906. *Felis ocreata agrius* Bate, P.Z.S. *1905, 2:* 317. Crete.

Felis silvestris Schreber, 1777 European Wild Cat

Approximate distribution of species: Scotland, Spain, France, Belgium, Italy, Sicily, Germany, Poland, Hungary, Yugoslavia, Rumania, Bulgaria, Greece; possibly still in Switzerland, Austria and Northern Portugal; Ukraine and Caucasus; Asia Minor.

On this species see Pocock, 1934, *J. Linn. Soc. Zool. 39:* 1.

Felis silvestris silvestris Schreber, 1777

1777. *Felis* (*Catus*) *silvestris* Schreber, Säugeth. *3:* 397. Germany.
1777. *Felis catus ferus* Erxleben, Syst. Regn. Anim. *1:* 518.
1896. *Catus ferox* Martorelli, Atti Soc. Ital. Sci. Nat. Milano, *35:* 253. *Lapsus* for *ferus*.

Range: Central Europe, from France, Northern Spain and Italy eastwards into South-Western Russia, western shores of the Black Sea, and probably Greece (Pocock).

Felis silvestris morea Trouessart, 1904

1904. (*Felis catus*) *morea* Trouessart, Cat. Mamm. Suppl. 273. Based on *Felis catus ferus* var. e *Morea* of Reichenbach, 1852, Vollständigste Nat., Raubsäugeth. 362. Above Dragomanou, near Mt. Diaphorti, West-Central Morea (Peloponnesus), Greece. (Harper, 1940, J. Mamm. *21:* 193.) Range: Southern Greece.

Felis silvestris caucasica Satunin, 1905

1905. *Felis catus caucasicus* Satunin, Mitt. Kauk. Mus. *2:* 154, 316. Borzhom, Caucasus.
1916. *Felis silvestris trapezia* Blackler, Ann. Mag. N.H. *18:* 73. Khotz, near Trebizond, 500 ft., Asia Minor.

Felis silvestris grampia Miller, 1907

1907. *Felis grampia* Miller, Ann. Mag. N.H. *20:* 396. Invermoriston district, Inverness, Scotland. Range: now restricted to the wilder parts of Scotland, north of a line between Glasgow and Dundee (Pocock).

Felis silvestris tartessia Miller, 1907

1907. *Felis tartessia* Miller, Ann. Mag. N.H. *20:* 397. Coto Doñana, Huelva, Spain. Range: Southern Spain.

Felis silvestris molisana Altobello, 1921

1921. *Felis molisana* Altobello, Fauna dell Abruzzo, Mamm. 55. Molise, Italy.

Felis silvestris euxina Pocock, 1943

1943. *Felis silvestris euxina* Pocock, Ann. Mag. N.H. *10:* 701. Baspunar, in Dobrudscha, Rumania.

Felis libyca Forster, 1780 — African Wild Cat

Approximate distribution of species: Islands of Sardinia, Corsica and Majorca in Mediterranean; South-Eastern Transcaucasia, Russian Turkestan, Kazakstan (except northern parts); Chinese Turkestan; Arabia, Iraq, Persia, Palestine, Syria, Afghanistan; Punjab, Sind, Cutch, Rajputana and Central India; Morocco, Algeria, Libya, Egypt; Africa, south of the Sahara from Northern Nigeria, Asben, the Sudan and Somaliland southwards to Transvaal, Natal, and regions of King Williams Town and Cape Agulhas in Cape Province.

Felis libyca libyca Forster, 1780

1780. *Felis lybica* [sic] Forster in Buffon's Nat. Vierf. Thiere, *6:* 313. Gafsa, Tunis. The original spelling of this name was adopted by Pocock and G. Allen, but we think Forster made a mistake which comes under the heading of a *lapsus*. It could not have been ignorance, since the name "Libya" was in common use by the Romans; the Latin for Libyan is *libycus*.

1792. *Felix* [sic] *lynx lybiensis* Kerr, Anim. Kingd. 156. Gafsa, Tunis.

1885. *Felis cristata* Lataste, Actes Soc. Linn. Bordeaux, *39:* 229. Not of Falconer & Cautley, 1836. Haidra, Tunis.

Range: from Morocco, Algeria and Tunis to Egypt; through Nubia to the Anglo-Egyptian Sudan, and eastwards to Suakin and Massowah; and, according to Flower, the western coast of Sinai (Pocock).

Felis libyca ornata Gray, 1830 — Indian Desert Cat

1830. *Felis ornata* Gray, Illustr. Ind. Zool. *1*, pl. 2. India.

1834. *Felis servalina* Jardine, Nat. Libr. Felinae, *4:* 232. India.

1863. *Felis torquata* Blyth, P.Z.S. 185 [in part; not of Cuvier, 1826, which is based on a feral domestic cat].

Range: Indian range of the species, as listed above.

Felis libyca bubastis Hemprich & Ehrenberg, 1833

1833. *Felis bubastis* Hemprich & Ehrenberg, Symb. Phys. Mamm. *2: ii verso*, Egypt. The Sacred Cat of ancient Egypt.)

Felis libyca caudata Gray, 1874

1874. *Chaus caudatus* Gray, P.Z.S. 31, pl. 6. Kokand, Fergana, Eastern Russian Turkestan [Western Aral part of Syr-Darya district, according to Ognev].

? 1915. *Felis caudata schmitmkovi* Birula, Ann. Mus. Zool. Acad. Sci. *19:* 11. Kopal district, Semirechyia, Eastern Russian Turkestan.

1915. *Felis caudata griseoflava* Zukowski, Arch. Nat. Berlin, *80*, 9: 95. Between west bank Lake Balkash and River Chu, Russian Turkestan.

? 1915. *Felis caudata longipilis* Zukowsky, *loc. cit.* 97. Region east of Lake Balkash, Russian Turkestan. Not of Fitzinger, 1868.

1915. *Felis caudata macrothrix* Zukowsky, Arch. Nat. Berlin, *80*, 10: 125. Substitute for *longipilis* Zukowsky, preoccupied.

Range: Russian Turkestan, southwards into Persia and Afghanistan, eastwards into Chinese Turkestan.

FELIS LIBYCA SARDA Lataste, 1885

1885. *Felis libyca* var. *sarda* Lataste, Actes Soc. Linn. Bordeaux, *39:* 231. Sarrabus, Sardinia.

1896. *Felis mediterranea* Martorelli, Atti Soc. Ital. Sci. Nat. Milano, *35:* 266. Sardinia.

1906. *Felis ocreata mauritana* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *6:* 632. Mogador, Morocco.

1920. *Felis lybica cyrenarum* Ghigi, Mem. R. Accad. Bologna, *7:* 79. Cirene, Cyrenaica, Libya.

(?) 1929. *Felis revi* Lavauden, C.R. Acad. Sci. Paris, *189:* 1023. Annes Forest, on border of Lake Biguglia, south of Bastia, Corsica.

(?) 1930. *Felis catus jordansi* Schwarz, Zool. Anz. *91:* 223. Margarita, Majorca, Balearic Islands.

Range: Mediterranean islands as just listed, also Morocco, Algeria, Tunis, Libya.

FELIS LIBYCA KOZLOVI Satunin, 1905

1905. *Felis (Felis) kozlovi* Satunin, Ann. Mus. St. Pétersb. *9:* 533. Oasis of Ljuktschun, Eastern Tianshan Mountains.

FELIS LIBYCA MURGABENSIS Zukowsky, 1915

1915. *Felis (Felis) murgabensis* Zukowsky, Arch. Nat. Berlin, *80*, 10: 127. Tachta, on River Murgab, 36° N., 63° E., Afghan-Turkestan border.

FELIS LIBYCA MATSCHIEI Zukowsky, 1915

1915. *Felis (Felis) matschiei* Zukowsky, Arch. Nat. Berlin, *80*, 10: 130. One hundred and ten versts south of Geok Tepe (38° N., 57½° E.), Transcaspia.

FELIS LIBYCA NESTEROVI Birula, 1916

1916. *Felis ornata nesterovi* Birula, Ann. Mus. Zool. St. Pétersb. *21*, suppl. i–ii. Nachr-Chasasch, Lower Iraq. Ranges into Southern Persia.

FELIS LIBYCA IRAKI Cheesman, 1921

1921. *Felis ocreata iraki* Cheesman, J. Bombay N.H. Soc. *27:* 33. Kuweit, Arabia. Ranges into Iraq (Sheik Saad, Tigris).

FELIS LIBYCA ISSIKULENSIS Ognev, 1930

1930. *Felis ornata issikulensis* Ognev, Z. Säug. *5:* 67–69. North-western shore of Lake Issyk Kul, Eastern Russian Turkestan.

FELIS LIBYCA TRISTRAMI Pocock, 1944

1944. *Felis lybica tristrami* Pocock, Ann. Mag. N.H. *11:* 125. Ghor Seisaban, Moab, Palestine.

1867. *Felis syriaca* Tristram, N.H. of the Bible, 67. Syria. Not of Fischer, 1829.

1895. *Felis maniculata* Yerbury & Thomas, P.Z.S. 547. Aden, Southern Arabia. Not of Cretzschmar, 1826.

Felis bieti Milne-Edwards, 1892 Chinese Desert Cat

Approximate distribution of species: Mongolia, Kansu, Szechuan.

Felis bieti bieti Milne-Edwards, 1892

1892. *Felis bieti* Milne-Edwards, Rev. Gen. des Sci. Pures & Appliquées, *3:* 671. Vicinity of Tongolo and Tatsienlu, Szechuan, China.
1893. *Felis pallida* Buchner, Bull. Acad. Imp. Sci. St. Pétersb. *35:* 433. Southern Tatung Range, Kansu, China.
1922. *Felis pallida subpallida* Jacobi, Abh. u. Ber. Mus. f. Tier. u. Völkerk, Dresden, *16,* 1: 9. Near Sungpan, Szechuan, China.

Felis bieti chutuchta Birula, 1917

1917. *Felis chutuchta* Birula, Ann. Mus. Zool. Acad. Sci. Petrograd, *21,* Nouv. et Faits Divers, 1. Nor in Province Goizso, Southern Mongolia.

Felis bieti vellerosa Pocock, 1943

1943. *Felis bieti vellerosa* Pocock, P.Z.S. *113B:* 172, fig. Near Yulinfu, 4,000 ft., on borders of Ordos and North-Eastern Shensi, China.

Felis chaus Güldenstaedt, 1776 Jungle Cat

Approximate distribution of species: Eastern Transcaucasia, west coast Caspian Sea as far north as delta of Volga, Russian Turkestan (Southern Turkmenia, whole of Amu-Darya, east coast Sea of Aral, Middle and Lower Syr-Darya, Lower Chu); Chinese Turkestan, Yunnan in Western China; Asia Minor, Persia, Iraq, Syria, Palestine, Afghanistan; Baluchistan and Kashmir, thence southwards over Peninsular India to Ceylon, eastwards to Nepal and Burma; Indo-China, Siam; Egypt. (? Southern Algeria, Heim de Balsac.)

Felis chaus chaus Güldenstaedt, 1776

1776. *Felis chaus* Guldenstaedt, Nov. Com. Acad. Petrop. *20:* 483. Terek River, north of the Caucasus.
1811. *Felis catolynx* Pallas, Zoogr. Ross. As. *1:* 23. Terek River, north of the Caucasus (Pocock, 1939).
1876. *Felis shawiana* Blanford, J. Asiat. Soc. Bengal, *45,* 2: 49. Yarkand, Chinese Turkestan. (For status, see Pocock, 1939, Fauna Brit. India, Mamm. *1:* 290 (footnote).)
1898. *Felis chaus typica* de Winton, Ann. Mag. N.H. *2:* 291.

Range: Turkestan, Caucasus, Persia, Baluchistan, Yarkand.

Felis chaus affinis Gray, 1830

1830. *Felis affinis* Gray, Illustr. Ind. Zool. *1,* pl. 3. Gangootri, in Tehri Garhwal, Northern India.
1836. *Lynchus erythrotus* Hodgson, J. Asiat. Soc. Bengal, *5:* 233. Nepal.
1844. *Felis jacquemontii* Geoffroy, Jacquemont's Voy. *4:* 58, Atlas, *2,* pls. 2, 3. Kursali, 8,500 ft., near Dehra Dun, Northern India.

Range: Kashmir to Sikkim; Yunnan.

Felis chaus kutas Pearson, 1832

1832. *Felis kutas* Pearson, J. Asiat. Soc. Bengal, *1:* 75. Midnapore, in Bengal, about 70 miles west of Calcutta. Range: Bengal, westwards to Cutch.

Felis chaus nilotica de Winton, 1898

1898. *Felis chaus nilotica* de Winton, Ann. Mag. N.H. *2:* 292. Near Cairo, Egypt.
1832. *Felis rüppelii* Brandt, Bull. Soc. Imp. Nat. Moscou, *4:* 209. Egypt. Not of Schinz, 1825.

Felis chaus furax de Winton, 1898

1898. *Felis chaus furax* de Winton, Ann. Mag. N.H. *2:* 293. Near Jericho, Palestine.
1902. *Lyncus chrysomelanotis* Nehring, S.B. Ges. Nat. Fr. Berlin, 124, 147. Jordan, Palestine.

Range includes Southern Syria, Iraq.

Felis (?) chaus maimanah Zukowsky, 1915

1915. *Felis (Felis) maimanah* Zukowsky, Arch. Nat. Berlin, *80*, 10: 139. Maimana (36° N., 65° E.). Afghanistan.

Felis chaus fulvidina Thomas, 1928

1928. *Felis affinis fulvidina* Thomas, P.Z.S. 834. Kampong Tomb, Annam, Indo-China. Range: to Siam and Burma.

Felis chaus prateri Pocock, 1939

1939. *Felis chaus prateri* Pocock, Fauna Brit. India, Mamm. *1:* 298. Jacobabad, Sind, Western India.

Felis chaus kelaarti Pocock, 1939

1939. *Felis chaus kelaarti* Pocock, Fauna Brit. India, Mamm. *1:* 300. Cheddikulam, North Province, Ceylon. Range: Ceylon and Southern India (south of the Kistna River).

Felis margarita Loche, 1858 Sand Cat

Approximate distribution of species: Southern Russian Turkestan (Kara-Kum Desert, region south-east of Krasnovodsk, Southern Kizil-Kum, round Termez, west of Bokhara); Arabia (skin in B.M. from Rub al Khali, 21° N., 55° E.), Sinai, Algeria, southwards to Asben.

Felis margarita margarita Loche, 1858

1858. *Felis margarita* Loche, Rev. Mag. Zool. *10*, 2: 49, pl. 1. Near Négonça, Algeria.
1867. *Felis marginata* Gray, P.Z.S. 275.
1905. *Felis ocreata marguerittei* Trouessart, Caus. Sci. Soc. Zool. de France, *1:* 386. Emendation of *margarita*.

Felis margarita thinobius Ognev, 1926

1926. *Eremaelurus thinobius* Ognev, Ann. Mus. Zool. Leningrad, *27:* 356, pl. 26. Repetek, Transcaspia, Russian Turkestan.

Felis margarita meinertzhageni Pocock, 1938

1938. *Felis margarita meinertzhageni* Pocock, Ann. Mag. N.H. *1:* 472. Also 1938, P.Z.S. *108*B: 43. El Golea, 30° N., Algerian Sahara.

Subgenus *OTOCOLOBUS* Brandt, 1841. "*Trichaelurus*" Satunin, 1905

Felis manul Pallas, 1776 Pallas's Cat

Approximate distribution of species: Transcaucasia, Russian Turkestan, in part (Southern Turkmenia, Lower Amu-Darya), Eastern Kazakstan, Transbaikalia. Everywhere rare in the U.S.S.R., according to Bobrinskii.) Zungaria (according to G. Allen), Tibet, Mongolia, Western China (states of Kansu, Szechuan). Afghanistan, Persia. Baluchistan, Kashmir.

Felis manul manul Pallas, 1776

1776. *Felis manul* Pallas, Reise. Russ. Reichs, *3:* 692. Jida River, south of Lake Baikal, Eastern Siberia.

1905. *Trichaelurus manul mongolicus* Satunin, Ann. Mus. Zool. Acad. Imp. Sci. St. Pétersb. *1904, 9:* 501. Not of Lesson, 1842.

1907. *Felis manul satuni* Lydekker, Game Animals India, 334.

Range: northern part of range of species as given above.

Felis manul nigripecta Hodgson, 1842

1842. *Felis nigripectus* Hodgson, J. Asiat. Soc. Bengal, *11:* 276. Tibet. Range: to Kashmir.

Felis manul ferruginea Ognev, 1928

1928. *Otocolobus manul ferrugineus* Ognev, C.R. Acad. Sci. U.R.S.S. 308. Mountain ridge of Missanev, Kopet-Dag Mountains, Transcaspia. Range: South-Western Turkestan, Northern Persia, Afghanistan, Baluchistan.

Subgenus *LYNX* Kerr, 1792

Felis lynx Linnaeus, 1758 European Lynx

Approximate distribution of species: formerly in the forested parts of Europe. Still found in Norway, Sweden, the Baltic States, Poland and the Balkans, including Greece, ? Sardinia, Spain and Portugal. Forest zone of Russia, Caucasus; the whole of Siberia as far as and including Sakhalin, but does not occur Kamtchatka; mountains of Russian Central Asia (Tarbagatai, Djungar Ala-Tau, Tianshan and Hissar-Alai system, Western Pamirs, Kopet-Dag). Chinese Turkestan, Tibet, Mongolia, Manchuria, perhaps Chihli in China. Kashmir. Asia Minor, Persia and ? Palestine. Also in North America.

Felis lynx lynx Linnaeus, 1758

1758. *Felis lynx* Linnaeus, Syst. Nat. 10th ed. *1:* 43. Near Upsala, Sweden.

1792. *Lynx vulgaris* Kerr, Anim. Kingd. Syst. Cat. Nos. 294, 295 and p. 157 of text.

1792. *Lynx vulgaris alba* Kerr, *loc. cit.* Forests of Sweden.

1792. *Felix Lynx vulgaris melinus* Kerr, Anim. Kingd. Syst. Cat. No. 296 and p. 157 of text. Banks of Volga, near Kazan, Russia.
1798. *Felis borealis* Thunberg, Beskrifning pa Svenska Djur. Mamm. 14. Forests of Northern Sweden.
1798. *Felis kattlo* Schrank, Fauna Boica, *1:* 52. Bohemia.
1820. *Felis lyncula* Nilsson, Skand. Fauna, *1:* 14. Wooded and mountainous regions of Scandinavia.
1824. *Felis cervaria* Temminck, Mon. Mamm.: 106. Asia.
1825. *Felis lupulinus* Thunberg, Denkschr. k. Ak. Wiss. München, *9:* 189. Northern Scandinavia.
1825. *Felis vulpinus* Thunberg, *loc. cit.* 192. Near Upsala, Sweden.
1829. *Felis virgata* Nilsson, Illum. Fig. Skand. Fauna, pls. 3, 4. Sweden.

Range: European range of species excluding Iberian Peninsula, Sardinia, and the Caucasus; eastwards to the Yenesei, Siberia.

Felis lynx pardina Temminck, 1824. Spanish Lynx

1824. *Felis pardina* Temminck, Monogr. Mamm. *1:* 116. Near Lisbon, Portugal.
1907. *Lynx pardella* Miller, Ann. Mag. N.H. *20:* 398. Coto Doñana, Huelva, Spain. New name for *pardina* Temminck, thought to have been preoccupied by *pardina* Oken, 1816 (unavailable). Not *Felis pardella* Pallas, 1784.

Felis lynx isabellina Blyth, 1847

1847. *Felis isabellina* Blyth, J. Asiat. Soc. Bengal, *16:* 1178. Tibet.
(?) 1863. *Lyncus tibetanus* Gray, Cat. Hodgsons Coll. B.M. 4.
1904. *Felis lynx wardi* Lydekker, The Field, *104:* 576. Altai Mountains.
1904. *Lynchus isabellinus kamensis* Satunin, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *9:* 13. Kam, South-Eastern Tibet.

Range: Kashmir, Tibet, north to Tianshan and Altai Mountains, and mountains of Russian Central Asia, Mongolia.

Felis lynx sardiniae Mola, 1908

1908. *Lynx sardiniae* Mola, Boll. Soc. Zool. Ital. Roma, *9:* 48. Nuoro, Sardinia.

Felis lynx dinniki Satunin, 1915

1915. *Lynx dinniki* Satunin, Mem. Cauc. Mus. Ser. A. *1:* 391. Name proposed for the North Caucasian Lynx (see Ognev, 1935, Mamm. U.S.S.R. *3:* 224).
1905. *Lynx pardina orientalis* Satunin, Isvest. Kauk. Mus. *2:* 166. Lenkoran, Transcaucasia. Not *Felis orientalis* Schlegel, 1857 (a *Panthera*).
1922. *Lynx lynx orientalis* aber. *guttata* Smirnov, Ann. Univ. Azerbaidjan, No. 2, 37. No locality.
1922. *Lynx lynx orientalis* aber. *virgata* Smirnov, *loc. cit.* Not of Illiger, 1811.

Felis lynx wrangeli Ognev, 1928

1928. *Lynx lynx wrangeli* Ognev, Rysi. Ohotnik, Nos. 5–6. (*M.V.*) Valley of River Dayeh, Hotan-Haia, Verhoiansk Mountains, Eastern Siberia.
(?) 1922. *Felix lynx* var. *baicalensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 351, *nom. nud.*

Range: Siberia, east of the Yenesei.

Subgenus *CARACAL* Gray, 1843

Felis caracal Schreber, 1776 Caracal Lynx

Approximate distribution of species: Russian Turkestan (only deserts of Turkmenia, as far north as Sea of Aral); Arabia, south to Aden, Palestine, Syria, Iraq, Persia, Afghanistan (according to Bobrinskii); Baluchistan, Punjab, Sind, Cutch, east to United Provinces, India; Egypt, Algeria, Morocco, and Africa south of the Sahara, from the Sudan, Somaliland and Asben to the Transvaal and Cape Province (Little Namaqualand, Clanwilliam, Deelfontein, etc.).

(Felis caracal caracal Schreber, 1776. Extralimital)

1776. *Felis caracal* Schreber, Säugeth. pl. 110, text *3:* 413, 587, 1777. Table Mountain, Cape Town, South Africa. For discussion of type locality and author, see J. A. Allen, 1924, Bull. Amer. Mus. N.H. *47:* 279, and Pocock, 1939, Fauna Brit. India, Mamm. *1:* 306.

1843. *Caracal melanotis* Gray, List Spec. Mamm. B.M. 46. Renaming of *caracal*.

Felis caracal algira Wagner, 1841

1841. *Felis caracal* var. *algira* Wagner, Reisen in der Regenschaft Algier, *3:* 76, pl. 4. Algeria.

1892. *Caracal berberorum* Matschie, S.B. Ges. Nat. Fr. Berlin, 114. Constantine, Algeria.

1912. *Felis (Caracal) berberorum spatzi* Matschie, S.B. Ges. Nat. Fr. Berlin, 61. Between Feriana and Tebessa, Tunis.

1912. *Caracal berberorum medjerdae* Matschie, S.B. Ges. Nat. Fr. Berlin, 62. Tunis.

1912. *Felis (Caracal) nubicus corylinus* Matschie, S.B. Ges. Nat. Fr. Berlin, 63. Supposed to be from Tangier, Morocco.

Felis caracal schmitzi Matschie, 1912

1912. *Felis (Caracal) caracal schmitzi* Matschie, S.B. Ges. Nat. Fr. Berlin, 64. The Dead Sea region, Palestine.

(?) 1829. *Felis caracal bengalensis* Fischer, Syn. Mamm. 210. Bengal. Not of Kerr, 1792.

1912. *Felis (Caracal) caracal aharonii* Matschie, S.B. Ges. Nat. Fr. Berlin, 66. Mouth of Chabur River, on Upper Euphrates, Syria.

(?) 1939. *Caracal caracal caracal* Müller, Pocock, Fauna Brit. India, Mamm. *1:* 307. If the view is accepted that *F. caracal* dates from Schreber, 1776, with type locality Cape of Good Hope, then it appears that the Indian and South-Western Asiatic race, if distinguishable, should be called *schmitzi* Matschie, which seems the first available Asiatic name.

Range: Central India, Punjab, Sind, Baluchistan, westwards at least to Arabia and Palestine (Pocock).

Felis caracal michaëlis Heptner, 1945

1945. *Felis (Caracal) caracal michaëlis* Heptner, C.R. Acad. Sci. Moscow, *49*, 3: 230. Bokourdak, west of Kara Kum Desert, 60 miles north of Ashabad, Turkmenia.

Subgenus *LEPTAILURUS* Severtzov, 1858

Felis serval Schreber, 1776 Serval

Approximate distribution of species: Algeria, and south of the Sahara from Senegal, the Sudan and Somaliland, southwards to South-West Africa, Transvaal and Eastern Cape Province (districts near Aliwal North, East London, Grahamstown, etc.).

(Felis serval serval Schreber, 1776. Extralimital)

1776. *Felis serval* Schreber, Säugeth. pl. 108, text, *3:* 407, 587, 1777. Cape of Good Hope, South Africa.

Felis serval constantina Forster, 1780

1780. *Felis constantina* Forster, in Buffon's Nat. d. Vierf. Thiere, *6:* 313. Vicinity of Constantine, Algeria. For use of this name see Pocock, 1944, P.Z.S. *114:* 65.
1829. *Felis caracal algiricus* Fischer, Synops. Mamm. 210. Algeria.

Subgenus *PARDOFELIS* Severtzov, 1858

Felis marmorata Martin, 1837 Marbled Cat

Approximate distribution of species: Nepal, Sikkim, Assam, Northern Burma, Indo-China, Malay States, Sumatra, Borneo.

Felis marmorata marmorata Martin, 1837

1837. *Felis marmorata* Martin, P.Z.S. *1836:* 108. Sumatra (see Robinson & Kloss, 1919, J. Fed. Malay States Mus. *7:* 261).
(?) 1843. *Felis longicaudata* Blainville, Ostéogr. Mamm. *Felis, 47.*

Range: Malay States, Sumatra, Borneo; recorded by Osgood (1932) from Tonkin, Indo-China.

Felis marmorata charltoni Gray, 1846

1846. *Felis charltonii* Gray, Ann. Mag. N.H. *18:* 211. Darjeeling, Northern India.
1847. *Felis ogilbii* Hodgson, Calcutta J.N.H. *8:* 44. Sikkim.
1863. *Leopardus dosul* Gray, Cat. Hodgson Coll. B.M., 2nd ed., 3, *nom. nud.*
1863. *Felis duvaucellii* Hodgson, *loc. cit., nom. nud.*

Range: Indian range of species as quoted above.

Subgenus *PROFELIS* Severtzov, 1858

Felis temmincki Vigors & Horsfield, 1827 Golden Cat

Approximate distribution of species: Tibet, Szechuan, Yunnan to Fukien, in Southern China; Nepal to Assam and Burma; Indo-China, Siam, Malay States, Sumatra.

Felis temminckii temminckii Vigors & Horsfield, 1827

1827. *Felis temminckii* Vigors & Horsfield, Zool. J. *3:* 451. Sumatra.
1831. *Felis moormensis* Hodgson, Gleanings in Science, *3:* 177. Nepal.
1863. *Felis aurata* Blyth, P.Z.S. 185. Not of Temminck, 1827.
1863. *Felis nigrescens* Gray, Hodgson's Cat. Mamm. Nepal in B.M., ed. 2, 4. Darjeeling, Northern India.
1924. *Felis temminckii hainsei* Sowerby, China J. Sci. & Arts, *2:* 352. Tengueh, South-Western Yunnan, China.

Range: Nepal to Burma, Indo-China, Yunnan, south to Malay Peninsula and Sumatra.

Felis temminckii tristis Milne-Edwards, 1872

1872. *Felis tristis* Milne-Edwards, Rech. Mamm. 223, pl. 31. Locality unknown.
1904. *Felis semenovi* Satunin, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *9:* 524. North-Eastern Szechuan, China.

Range: Tibet, Szechuan, ? Upper Burma.

Felis temminckii dominicanorum Sclater, 1898

1898. *Felis dominicanorum* Sclater, P.Z.S. 2, pl. 1. Foochow, Fukien, China. Pocock and Osgood list this form as a valid race; G. Allen (1938) thought it was a synonym of *tristis*; the following names were also placed in the synonymy of *tristis:*
1908. *Felis temminckii mitchelli* Lydekker, P.Z.S. 433. Szechuan, China.
1922. *Felis (Catopuma) melli* Matschie, Arch. Nat. *88*, A, 10: 36. Weishi, Yunnan. Not of Matschie, 1922 (*Felis (Neofelis) melli*).
1926. *Felis temminckii badiodorsalis* Howell, Proc. Biol. Soc. Washington, *39:* 143. New name for *melli* Matschie, preoccupied.

Range: Southern China.

Subgenus *PRIONAILURUS* Severtzov, 1858 (including *Tibethailurus* Severtzov, 1858)

Felis bengalensis Kerr, 1792 Leopard Cat

Approximate distribution of species: Amur-Ussuri region of the Far East of Siberia, Manchuria, Korea, Tsushima Island (between Korea and Japan), Formosa, Quelpart I., Hainan, and all the larger states of China, Tibet; Baluchistan and Kashmir, southwards to at least Coorg and Palni Hills in Peninsular India, eastwards to Nepal, Assam and Burma; Indo-China, Malay States, Sumatra, Java, Bali, Borneo, to the Philippine Islands.

Felis bengalensis bengalensis Kerr, 1792

1792. *Felis bengalensis* Kerr, Anim. Kingd. 151. Southern Bengal.
?) 1829. *Felis nipalensis* Horsfield & Vigors, Zool. J. *4:* 382. ? Nepal.
1842. *Leopardus ellioti* Gray, Ann. Mag. N.H. *10:* 260. Bombay Presidency.
1867. *Felis wagati* Gray, P.Z.S. 400. Tenasserim.

1867. *Felis tenasserimensis* Gray, P.Z.S. 400. Tenasserim.
(?) 1869. *Felis herschelii* Gray, Cat. Carn. 28. India.

Range: Peninsular India, Burma, Siam, Indo-China, to Yunnan, China.

Felis bengalensis chinensis Gray, 1837

1837. *Felis chinensis* Gray, Mag. N.H. *1:* 577. Probably Canton, Kwantung, Southern China.
1843. *Leopardus reevesii* Gray, List. Mamm. B.M. 44. China.
1872. *Felis scripta* Milne-Edwards, Nouv. Arch. Mus. H.N. 7, Bull.: 92, pls. 57, 58, fig. 1. Szechuan, China.
1872. *Felis microtis* Milne-Edwards, Rech. H.N. Mamm. 221, pls. 31A, 31B, figs. 1–1b. Near Pekin, Chihli, China. Bobrinskii lists this form as a valid race of *euptilura*, from the Siberian Far East.
1872. *Felis decolorata* Milne-Edwards, Rech. H.N. Mamm. 223. Near Pekin.
1903. *Felis ricketti* Bonhote, Ann. Mag. N.H. *11:* 374. Foochow, Fukien, Southern China.
1903. *Felis ingrami* Bonhote, Ann. Mag. N.H. *11:* 474. Van Gin Shan Mountains, Northern Kweichow, China.
1905. *Felis anastasiae* Satunin, Ann. Mus. Zool. Acad. Imp. Sci. St. Pétersb. *1904, 9*: 528. Kam (Tibet), Kansu and North-Western Szechuan, China.
1930. *Felis sinensis* Shih, Bull. Dept. Biol. Sun. Yatsen. Univ. Canton, No. 4, 4. Chinsiu, Kwangsi, Southern China.

Range: Chinese range of the species, apparently excepting Yunnan; Formosa. Recorded from Annam, Indo-China, by Osgood, who gave it specific rank. Pocock (1939, 273) appears to think that *scripta* (with synonyms *ingrami* and *anastasiae*) is a valid race.

Felis bengalensis horsfieldi Gray, 1842

1842. *Leopardus horsfieldii* Gray, Ann. Mag. N.H. *10:* 260. Bhutan, Northern India.
1832. *Felis nipalensis* Hodgson, J. Asiat. Soc. Bengal, *1:* 341. Not of Vigors & Horsfield, 1829.
1844. *Felis pardochrous* Hodgson, Calcutta J.N.H. *4:* 286. Nepal.

Range: Kashmir, Punjab, Kumaon, Nepal, Bhutan, Sikkim.

Felis bengalensis euptilura Elliot, 1871

1871. *Felis euptilura* Elliot, P.Z.S. 761. Renaming of *undata* Radde, preoccupied.
1862. *Felis undata* Radde, Reise Ost. Sibir. 106. Not of Desmarest, 1816. Amur Djesa, Eastern Siberia.
1904. *Felis raddei* Trouessart, Cat. Mamm. Suppl. *1:* 271.

Felis (?) bengalensis manchurica Mori, 1922

1922. *Felis manchurica* Mori, Ann. Mag. N.H. *10:* 609. Near Mukden, Manchuria.

Felis bengalensis trevelyani Pocock, 1939

1939. *Prionailurus bengalensis trevelyani* Pocock, Fauna Brit. India, Mamm. *1:* 273. Near Gilgit, 5,000 ft. Range: Northern Kashmir, Upper Punjab, Southern Baluchistan.

Felis rubiginosa Geoffroy, 1831 Rusty-spotted Cat

Approximate distribution of species: Southern India (Madras, Nellore and Khandala are quoted by Pocock) and Ceylon.

Felis rubiginosa rubiginosa Geoffroy, 1831

1831. *Felis rubiginosa* I. Geoffroy, Bélanger, Voy. Ind. Orient. Zool. 140. Pondicherry, Southern India.

Felis rubiginosa phillipsi Pocock, 1939

1939. *Prionailurus rubiginosus phillipsi* Pocock, Fauna Brit. India, Mamm. *1:* 278. Monsakanda, 3,000 ft., Gammaduwa, Central Province, Ceylon.

Felis viverrina Bennett, 1833 Fishing Cat

Approximate distribution of species: Ceylon, Western Ghats, Western Sind, Kumaon and Nepal, in India; Indo-China, Siam; Sumatra, Java. (Sclater's record from Formosa, quoted by Kuroda, is probably erroneous.)

Felis viverrina Bennett, 1833

1833. *Felis viverrinus* Bennett, P.Z.S. 68. India, probably the Malabar coast.
1834. *Felis himalayanus* Jardine, Nat. Libr. Felinae, *4:* 230, pl. 24. Himalayas.
1836. *Felis viverriceps* Hodgson, J. Asiat. Soc. Bengal, *5:* 232. Nepal.
1867. *Viverriceps bennettii* Gray, P.Z.S. 268. India.

Range: as above.

Felis (Ictailurus) planiceps Vigors & Horsfield, 1827, Zool. J. *3:* 450. Sumatra (distribution: Lower Siam, Malay States, Sumatra, Borneo), has been recorded from Patani in Peninsular Siam, but so far as we know is extralimital to the present list.

Not certainly identifiable: *Felis pardella* Pallas, 1784, Acta Acad. Sci. Imp. Petrop. *1781, 1:* 281. ? Cape of Good Hope.

Genus **NEOFELIS** Gray, 1867

1867. *Neofelis* Gray, P.Z.S. 265. *Felis macrocelis* Temminck = *Felis diardi* Cuvier (*N. nebulosa diardi*, from Sumatra).

1 species: *Neofelis nebulosa*, page 314

Neofelis nebulosa Griffith, 1821 Clouded Leopard

Approximate distribution of species: Hainan, Fukien and adjacent states in Southern China, Formosa; Nepal, Sikkim, parts of Burma; Indo-China, Lower Siam, Malay States, Sumatra, Borneo.

NEOFELIS NEBULOSA NEBULOSA Griffith, 1821

1821. *Felis nebulosa* Griffith, Descr. Anim. (Carn.), 37, pl. Canton, Kwantung, Southern China.

1922. *Felis (Neofelis) melli* Matschie, Arch. Nat. *88*, sect. A, 10: 35. Probably near Canton.

Range: Southern China, Indo-China.

NEOFELIS NEBULOSA MACROSCELOIDES Hodgson, 1853

1853. *Felis macrosceloides* Hodgson, P.Z.S. 192, pl. 38. Nepal.

1843. *Felis macrocelis* Tickell, J. Asiat. Soc. Bengal, *12:* 814. Not of Temminck, 1824.

Range: Nepal to Burma.

NEOFELIS NEBULOSA BRACHYURUS Swinhoe, 1862

1862. *Leopardus brachyurus* Swinhoe, P.Z.S. 352, pl. 43. Formosa. Available if the Formosan race proves racially distinct. Kuroda, 1938, Handlist Jap. Mamm., calls the Formosan race *diardi* Desmoulins, 1823, Dict. Class. *3:* 495; probably not *diardi* G. Cuvier, 1823, from Sumatra.

Genus **PANTHERA** Oken, 1816

1816. *Panthera* Oken, Lehrb. Naturgesch. *3*, 2: 1052. *Felis pardus* Linnaeus.

1816. *Tigris* Oken, Lehrb. Naturgesch. *3*, 2: 1066. *Felis tigris* Linnaeus. Valid as a subgenus.

1816. *Leo* Oken, Lehrb. Naturgesch. *3*, 2: 1070. *Felis leo* Linnaeus. Valid as a subgenus.

1829. *Leo* Brehm, Isis (Oken), 637. *Felis leo* Linnaeus.

1843. *Tigris* Gray, List Mamm. B.M. 40. *Felis tigris* Linnaeus.

1854. *Uncia* Gray, Ann. Mag. N.H. *14:* 394. *Felis uncia* Schreber. Valid as a subgenus.

1868. *Pardus* Fitzinger, S.B.K. Akad. Wiss. Wien, *58*, 1: 459. *Felis pardus* Linnaeus.

4 species in the area covered by this list:

Panthera leo, page 319
Panthera pardus, page 316
Panthera tigris, page 318
Panthera uncia, page 320

Hershkowitz (1948, *J. Mamm. 29:* 273, and 1949, *30:* 297) holds that all Oken's 1816 names are invalid and that his *Panthera* in any case would not be valid for the lions, tigers and leopards. J. A. Allen (1902, *Bull. Amer. Mus. N.H. 16:* 378) took a different view, and many of Oken's names, including *Panthera*, are in current use by mammalogists today. For this reason, and for general reasons explained in the Introduction, we have not discarded *Panthera* Oken, 1816. But for those who do not agree with us, *Leo* Brehm, 1829, is available for the great cats.

Pocock included lions, tigers and leopards in *Panthera*, but placed the ounce in a separate genus, *Uncia*. Simpson (1945) included all the above and the clouded leopard in *Panthera*. We take a middle view, and while following Simpson in tentatively including the ounce in the genus *Panthera*, we diverge from him in according generic rank to the clouded leopard, *Neofelis*.

Subgenus *PANTHERA* Oken, 1816

Panthera pardus Linnaeus, 1758 Leopard

Approximate distribution of species: Caucasus, Kopet-Dag Mountains (South-Western Turkestan) and Amur region of Eastern Siberia; Manchuria, most of the larger states of China (perhaps excepting Kansu), Tibet; Asia Minor, Persia, Sinai, Arabia; India, from Kashmir and North-West Frontier south to Ceylon, eastwards to Nepal and Burma, west to Baluchistan; Indo-China, Malay States, Java, Kangean Islands; Morocco, Algeria, Egypt (where rare); Tropical Africa, from ? Northern Nigeria, Sudan and Somaliland southwards to the Cape Province, where it still occurs in Little Namaqualand, wilder country in the mountains near Cape Town (for instance, rarely to Stellenbosch region), Grahamstown district, etc.

PANTHERA PARDUS PARDUS Linnaeus, 1758

1758. *Felis pardus* Linnaeus, Syst. Nat. 10th ed. *1:* 41. Egypt.
1816. *Panthera vulgaris* Oken, Lehrb. Nat. *3*, 2: 1058. (Unavailable.)

PANTHERA PARDUS PANTHERA Schreber, 1777

1777. *Felis panthera* Schreber, Säugeth. *3:* 384. Algeria.
1832. *Felis palearia* Cuvier, H.N. Mamm. pl. 121, text. Algeria.
1843. *Felis pardus barbarus* Blainville, Ostéogr. Mamm. *Felis*, 186, pl. 8. Algeria. *Nec* Fisher, 1829.

PANTHERA PARDUS FUSCA Meyer, 1794

1794. *Felis fusca* Meyer, Zool. Ann. *1:* 394. Bengal.
1856. *Felis longicaudata* Valenciennes, C.R. Acad. Sci. Paris, *42:* 1036. Not of Blainville, 1843. Ceylon and Malabar coast.
1868. *Panthera antiquorum* Fitzinger, S.B. Akad. Wiss. Wien, *58:* 466. Not of Gray, 1827.
1896. *Felis pardus* var. *melas* Pousargues, Bull. Mus. H.N. Paris, *2*, 5: 181. Not of Cuvier, 1809.
1904. *Felis pardus chinensis* Brass, Nutzbare Tiere Ostasiens, 6.
1912. *Felis pardus variegata* G. Allen, Mem. Mus. Comp. Z. Harvard, *40:* 235. Not of Wagner, 1841. Changyanghsien, Hupeh (Yangtze Valley), China. Range: Kashmir, south to Ceylon; Burma; Szechuan to Fukien, in Southern China.

PANTHERA PARDUS NIMR Hemprich & Ehrenberg, 1833

1833. *Felis nimr* Hemprich & Ehrenberg, Symb. Phys. Mamm. *2: gg*, pl. 17. (Founded partly on an Abyssinian skin and partly on an Arabian one.) Arabia. Status not sure.

PANTHERA PARDUS TULLIANA Valenciennes, 1856

1856. *Felis tulliana* Valenciennes, C.R. Acad. Sci. *42:* 1039. Ninfi, 40 km. east of Smyrna, Western Asia Minor. Range: to Transcaucasia.

PANTHERA PARDUS ORIENTALIS Schlegel, 1857

1857. *Felis orientalis* Schlegel, Handl. der Dierkunde, *1:* 23. Korea.
1903. *Felis villosa* Bonhote, Ann. Mag. N.H. *11:* 475. Amur Bay.
Range: Korea to Amur district, Eastern Siberia.

PANTHERA PARDUS PERNIGRA Gray, 1863

1863. *Leopardus perniger* Gray, Cat. Hodgson's Coll. B.M., 2nd ed. 3, and Preface v. Sikkim, 6,000–8,000 ft. Ranges to Nepal.

PANTHERA PARDUS JAPONENSIS Gray, 1862

1862. *Leopardus japonensis* Gray, P.Z.S. 262. Said to be from Japan, where the animal does not occur. More likely Northern China (see G. Allen, 1938, 477).
1867. *Felis fontanierii* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 375. Near Pekin, Chihli, China.
1867. *Leopardus chinensis* Gray, P.Z.S. 264. (Not *Felis chinensis* Gray, 1837.) Mountains west of Pekin, China. Listed as a valid form (under *Felis*, therefore preoccupied) by Bobrinskii, 1944.
1904. *Felis pardus grayi* Trouessart, Cat. Mamm. Viv. Foss. 268. New name for *chinensis* Gray.
1907. *Panthera hanensis* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 198. Hinganfu, China.
1930. *Panthera pardus bedfordi* Pocock, J. Bombay N.H. Soc. *34:* 323. Shangchow, Shensi, 3,000 ft., China. Pocock adopted the name *japonensis* for this race; see discussion in G. Allen, 1938, Mamm. China & Mongolia, *1:* 478.

Range: Northern China, and possibly to south Ussuri region.

PANTHERA PARDUS CISCAUCASICA Satunin, 1914

1914. *Leopardus pardus ciscaucasicus* Satunin, Conspectus Mamm. *1:* 159. Kuban Province, Caucasus.

PANTHERA PARDUS SAXICOLOR Pocock, 1927

1927. *Panthera pardus saxicolor* Pocock, Ann. Mag. N.H. *20:* 213. Asterabad, Persia. Range: to Baluchistan.
1878. *Felis leopardus* Sclater, P.Z.S. 289. Probably Persia. Not of Schreber, 1775.

PANTHERA PARDUS SINDICA Pocock, 1930

1930. *Panthera pardus sindica* Pocock, J. Bombay N.H. Soc. *34:* 80. Kirthar range, Sind-Baluchistan border.

PANTHERA PARDUS MILLARDI Pocock, 1930

1930. *Panthera pardus millardi* Pocock, J. Bombay N.H. Soc. *34:* 316, pl. 8. Kashmir.

PANTHERA PARDUS DELACOURI Pocock, 1930

1930. *Panthera pardus delacouri* Pocock, J. Bombay N.H. Soc. *34:* 325, pl. 11. Hue, Annam, Indo-China.
(?) 1914. *Felis pardus variegata* Lydekker, Rowland Wards Records, 498. Not of Wagner, 1841.

PANTHERA PARDUS JARVISI Pocock, 1932

1932. *Panthera pardus jarvisi* Pocock, Abstr. P.Z.S. 33; P.Z.S. 546. Sinai.

For a review of these races, see Pocock, 1930, *J. Bombay N.H. Soc. 34:* 64 and 307.

Subgenus *TIGRIS* Oken, 1816 (Gray, 1843)

Panthera tigris Linnaeus, 1758 Tiger

Approximate distribution of species: South-eastern Transcaucasia (Talysh), "it apparently does not breed there, only visiting the area from Iran" (Bobrinskii), Southern Russian Turkestan, where rare ("in very small numbers on the lower Ili, all along the Amu-Darya . . . it occasionally passes from the lower Amu-Darya to the lower Syr-Darya" (Bobrinskii), possibly still in small numbers on the upper Murgab and Atrek, in Southern Turkmenia); Ussuri region and middle Amur region of Eastern Siberia, Manchuria, Lob Nor district Chinese Turkestan), Fukien and perhaps adjacent parts of Southern China, but evidently rare in other parts of China; Persia; most of India (except desert regions), and east to Assam and Burma (we cannot trace any reliable reference to its occurrence in Kashmir), Indo-China, Malay States, Sumatra, Java, Bali.

PANTHERA TIGRIS TIGRIS Linnaeus, 1758

1758. *Felis tigris* Linnaeus, Syst. Nat. 10th ed. *1:* 41. Bengal.
1858. *Tigris striatus* Severtzov, Rev. Mag. Zool. *10:* 386. Renaming of *tigris*.
1867. *Tigris regalis* Gray, P.Z.S. 263. Renaming of *tigris*.

Range: Kumaon and Nepal Terai, southwards to Tenasserim and Peninsular India, east to Indo-China.

PANTHERA TIGRIS VIRGATA Illiger, 1815

1815. *Felis virgata* Illiger, Abh. K. Akad. Wiss. Berlin, 98 (see also Matschie, 1897, S.B. Ges. Nat. Fr. Berlin, 17). Mazanderan, Northern Persia (Harper, 1940, J. Mamm. *21:* 194).
1904. *Felis* (*Tigris*) *tigris septentrionalis* Satunin, Priroda i Ochota, *7:* 57. Twelve versts west of Lenkoran, Talysh, Transcaucasia.
1916. *Felis tigris trabata* Schwarz, Zool. Anz. *47:* 353. Valley of River Ili, south of Lake Balkash, Eastern Russian Turkestan.

Range: Transcaucasia, through Northern Persia to Northern Afghanistan to the Aral Sea and Lake Balkash in Russian Turkestan (formerly to the Ob basin and the Altai).

PANTHERA TIGRIS LONGIPILIS Fitzinger, 1868

1868. *Felis longipilis* Fitzinger, S.B. Akad. Wiss. Wien. *58:* 455. Amurland (type locality restricted by Lydekker, 1901, The great and small game of Europe, Western and Northern Asia, and America, 288. See also Harper, 1940, J. Mamm. *21:* 195).
(?) 1842. *Felis mongolica* Lesson, Tabl. Règn. An. 50. Mongolia, *nom. nud.*
1871. *Felis tigris* var. *amurensis* Dode, P.Z.S. 480.

Range: Amur and Ussuri regions of Siberia and Manchuria, possibly into Chihli and Mongolia.

PANTHERA TIGRIS CORFENSIS Brass, 1904

1904. *Felis tigris coreensis* Brass, Nutzbare Tiere Ostasiens, 4. Korea.
1915. *Tigris mikadoi* Satunin, Nasa ochota, No. 7, 18. (V.I. Ognev's reference.)

1925. *Felis tigris mandshurica* Baykov, Manchzhur. Tigr, 3. Harbin, Manchuria; and *Felis tigris mandshurica* var. *mikado* Baykov, *loc. cit.* 8. (*N.V.*)

Range: Korea and Southern Manchuria, through Eastern Mongolia and Northern China as far as the divide between the Hwang Ho and Yangtze basins (Harper, 1945). Possibly also the Ussuri region, as it is quoted in Bobrinskii, who does not give exact details.

Panthera tigris amoyensis Hilzheimer, 1905

1905. *Felis tigris* var. *amoyensis* Hilzheimer, Zool. Anz. *28:* 598. Near Hankow, Hupeh, China.

1929. *Panthera tigris styani* Pocock, J. Bombay N.H. Soc. *33:* 531. Northern China. (Probably from somewhere in the latitude of the Yangtze Valley, according to G. Allen, 1938, 472.)

Range: Southern China.

Panthera tigris lecoqi Schwarz, 1916

1916. *Felis tigris lecoqi* Schwarz, Zool. Anz. *47:* 351. Kurla district (? near Bagrash Kul), Lob Nor region, Chinese Turkestan.

Subgenus *LEO* Oken, 1816 (Brehm, 1829)

Panthera leo Linnaeus, 1758 Lion

Approximate distribution of species: Gir forest in Kathiawar, India. Formerly occurred in Persia and Iraq, but doubtful if any survive. Tropical Africa, from Somaliland, the Sudan and perhaps Senegal, south to South-West Africa and the Kruger National Park, Transvaal, and perhaps Zululand and Swaziland.

Panthera leo leo Linnaeus, 1758

1758. *Felis leo* Linnaeus, Syst. Nat. 10th ed. *1:* 41. Constantine, Algeria.

1826. *Felis leo barbaricus* Meyer, Dissert. Inaug. de Genera Felium, 6. (*N.V.*) 1826, Beytr. Anat. des Tiegers, 6. Barbary.

1829. *Felis leo barbarus* Fischer, Synops. Mamm. 197. Algeria.

1829. *Leo africanus* Brehm, Isis (Oken), 638. Africa.

1867. *Felis leo nigra* Loche, Explor. Sci. de l'Algérie, Zool. Mamm. 35. Algeria.

1867. *Leo nobilis* Gray, P.Z.S. 263. Renaming of *leo*. Extinct in Algeria and Tunis since about 1891, and in Morocco since the 1920's.

Panthera leo persica Meyer, 1826

1826. *Felis leo persicus* Meyer, Dissert. Inaug. de Genera Felium, 6. (*N.V.*) 1826, Beytr. Anat. des Tiegers, 6. Persia.

1829. *Felis leo bengalensis* Bennett, The Tower Menagerie, 1. Not of Kerr, 1792. Hariana, Northern India.

1829. *Leo asiaticus* Brehm, Isis (Oken), 638. Asia.

1833. *Felis leo goojratensis* Smee, P.Z.S. 140. Ahmadabad, Gujerat, India.

1843. *Felis leo indicus* Blainville, Ostéographie Mamm. *Felis*, atlas, pl. 6. India.

Range: Kathiawar, India, as above.

Subgenus *UNCIA* Gray, 1854

Panthera uncia Schreber, 1776 — Ounce or Snow Leopard

Approximate distribution of species: Eastern Russian Turkestan, north to Altai Mountains (quoted by Bobrinskii from Altai (rare), Tarbagatai (?), Dzhungar Ala-Tau, Tianshan system (in parts common), Alai, Zeravshan and Hissar ranges, Pamir (more common in Western Pamir)). Tibet (eastwards to Kam, according to Bobrinskii; certainly as far as Gyantse, near Lhasa) and, according to Ognev, Altyn Tag in Chinese Turkestan. Kashmir.

Panthera uncia Schreber, 1776

1776. *Felis uncia* Schreber, Säugeth. *3:* pl. 100 (1776) and text, 386, 586 (1777). Locality unknown.
1830. *Felis irbis* Ehrenberg, Ann. Sci. Nat. *21:* 394, 406. Renaming of *uncia*. Altai Mountains.
1855. *Felis uncioides* Horsfield (Hodgson MS.), Ann. Mag. N.H. *16:* 105. Nepal.

Genus **ACINONYX** Brookes, 1828

1828. *Acinonyx* Brookes, Cat. Anat. Zool. Mus. J. Brookes, 16, 33. *Acinonyx venator* Brookes = *Felis venatica* H. Smith.
1830. *Cynailurus* Wagler, Nat. Syst. Amph. 30. *Felis jubata* Schreber.
1841. *Cynaelurus* Gloger, Gemeinn. Naturgesch. *1:* 63. *Pro Cynailurus* Wagler.

1 species: *Acinonyx jubatus*, page 320

Acinonyx jubatus Schreber, 1776 — Cheetah

Approximate distribution of species: Southern Turkmenia (Atrek, Kopet-Dag, Tedshen and Murgab regions, rare), Persia, Arabia, Iraq and, according to Bobrinskii, Afghanistan and Baluchistan. According to Bodenheimer, Transjordania. Formerly Northern India, south of the Ganges, from Bengal to Rajputana, the Punjab and Sind; also Central India and the northern part of the Deccan; but now almost, if not quite, extinct in Hindustan (Pocock). ?Libya, Egypt, where rare (Flower, 1929). Morocco, Rio de Oro. In Tropical Africa it is less rare, and occurs from ? Northern Nigeria, the Sudan, Somaliland, south to South-West Africa, the Kruger National Park, Transvaal, and probably Swaziland and Zululand.

Acinonyx jubatus jubatus Schreber, 1776. Extralimital)

1776. *Felis jubata* Schreber, Saugeth. *3:* pl. 105 (1776), text, 392, 586 (1777). Cape of Good Hope, South Africa.
? 1804. *Felis guttata* Hermann, Obs. Zool. 38. ? Egypt. Status not sure.

ACINONYX JUBATUS VENATICUS Griffith, 1821

1821. *Felis venatica* Griffith, Vert. Anim. Carnivora, 93. India.
1828. *Acinonyx venator* Brookes, Cat. Anat. & Zool. Mus. Joshua Brookes, 16, 33. India.
(?) 1913. *Acinonyx raddei* Hilzheimer, S.B. Ges. Nat. Fr. Berlin, 291. Merv, Transcaspia.

Range: Asiatic range of the species, ? North Africa and, according to Pocock, probably to Somaliland. Pocock thought *raddei* might be valid, but it is not listed in Bobrinskii.

ORDER PINNIPEDIA

The pinnipedes were treated as a suborder of Carnivora by Simpson (1945); Gregory, 1910, *The Orders of Mammals;* Weber, 1928, *Die Säugetiere;* and Anderson, 1947, *Catalogue of Canadian Recent Mammals.* Pocock regarded them as being of less than subordinal rank. They were regarded as a distinct order by Miller, 1923, *List of North American Recent Mammals;* Ognev, 1935, *The Mammals of U.S.S.R. and adjacent countries, 3;* G. M. Allen, 1938, *Mammals of China and Mongolia, 1;* and Bobrinskii, 1944, *Mammals of U.S.S.R.*

The standard work on the pinnipedes as a whole is still J. A. Allen, 1880, *History of the North American Pinnipeds,* which is virtually a monograph of all species occurring north of the equator, and includes as well a revision of those of other seas. Keys to the families and genera will be found in this work, together with a detailed account of the nomenclatorial history of each form. A useful general work on the Otariidae and Phocidae is Howell, 1929, Contribution to the comparative anatomy of the eared and earless seals, *Proc. U.S. Nat. Mus. 73,* 15: 1–142.

FAMILIES: Odobenidae, page 324
Otariidae, page 321
Phocidae, page 325

FAMILY OTARIIDAE

Genera: *Callorhinus*, page 322
Eumetopias, page 323
Neophoca, page 323
Zalophus, page 323

J. Allen (1880) gave the following characters for the northern genera:

Callorhinus: pelage soft, with abundant underfur; ears longer; molars 12/10; smaller in size; grey in colour (black when young); facial part of skull short, convex; molars smaller than those of *Arctocephalus.*

Eumetopias: pelage harsh, lacking underfur; ears short; molars 10/10, the fifth pair separated by a long space from the fourth pair. Usually larger species; colour yellowish-brown (reddish-brown when young).

Zalophus: pelage, ears, colour, size essentially as in *Eumetopias*; molars 10/10 in continuous series. Sagittal crest very high.

To *Zalophus* he referred the Australian species *Z. lobatus*, which occurs in Japan according to Kuroda. The name *cinerea* Péron, 1816, antedates *lobatus* and is used for that species by Iredale and Troughton, although J. Allen thought it was unidentifiable. In recent years *Zalophus* has become restricted to the Californian species, and the name *Neophoca* is available for *cinerea*. *Neophoca* has a much less developed sagittal crest than *Zalophus* in British Museum material, and we consider the species *cinerea* should not be referred to *Zalophus*.

Genus **CALLORHINUS** Gray, 1859

1859. *Callorhinus* Gray, P.Z.S. 359. *Phoca ursina* Linnaeus.
1866. *Arctocephalus* Gill, Proc. Essex Inst. *5:* 11. Not of Cuvier, 1826.
1892. *Callotaria* Palmer, Proc. Biol. Soc. Washington, *7:* 156. Substitute for *Callorhinus*, assumed to be a homonym of *Callirhinus* Blanchard, 1850. Kuroda (1938) calls this genus *Otoes* Fischer, 1817, which is invalid according to Palmer (1904) as its type, *jubata* Gmelin, is composite. (*Otoes* Fischer, 1817, Mém. Soc. Imp. Nat. Moscou, *5:* 373, 445.)

1 species: *Callorhinus ursinus*, page 322

Callorhinus ursinus Linnaeus, 1758 Northern Fur Seal

Approximate distribution of species: North Pacific Ocean. Besides Western North America, it occurs in Eastern Siberia, Kurile Islands, Japan and Korea in winter. For details, see under subspecies.

CALLORHINUS URSINUS URSINUS Linnaeus, 1758

1758. *Phoca ursina* Linnaeus, Syst Nat. 10th ed. *1:* 37. Bering Island, off North-Eastern Siberia.
1828. *Otaria krachenninikowii* Lesson, Dict. Class. H.N. *13:* 420. Substitute for *Ursus marinus* Steller (1751 = *Phoca ursina* Linn.). Bering Sea.

Range: "rookeries on the Commander Islands, and a few at the southern end of Kamtchatka and on neighbouring islands of the Kurile group; winters on the east coasts of Japan" (Bobrinskii). Hokkaido, Hondo (Kuroda).

CALLORHINUS URSINUS CURILENSIS Jordan & Clark, 1899

1899. *Callorhinus curilensis* Jordan & Clark, Fur Seals & Fur Seal Islands of North Pacific, *3:* 3. Robben Island, west of Kurile Islands.
? 1811. *Phoca nigra* Pallas, Zoogr. Ross. Asiat. *1:* 107. Based apparently on a young specimen.

Range: "rookeries on Seal Island (east of Sakhalin) and a few on the Kurile Islands, winters on the coast of Korea, reached via Peter the Great Bay" (Bobrinskii).

Genus **EUMETOPIAS** Gill, 1866

1866. *Eumetopias* Gill, Proc. Essex Inst. *5:* 7. *Arctocephalus monteriensis* Gray = *Phoca jubata* Schreber.

1 species: *Eumetopias jubata*, page 323

For a discussion of the nomenclature of this species, see J. A. Allen, 1902, The names of some of the Otariidae, *Bull. Amer. Mus. N.H. 16:* 111.

Eumetopias jubata Schreber, 1776 Steller's, or Northern Sea-lion

Approximate distribution of species: North Pacific Ocean. Besides Western North America, occurs off Eastern Siberia ("the best-known rookeries are in the Sea of Japan, near Vladivostock, in the Sea of Okhotsk on Ioniu Island and the Yamskie Islands, and in Bering Sea on Cape Shipunskii (South-Western Kamtchatka)" (Bobrinskii); and Japan (recorded from Sakhalin, Kuriles, Hokkaido, N. Hondo and Korea).

Eumetopias jubata Schreber, 1776

1776. *Phoca jubata* Schreber, Säugeth. *3:* 300, pl. 83B. North Pacific Ocean (eastern coast Kamtchatka, according to Ognev).
1811. *Phoca leonina* Pallas, Zoogr. Rosso-Asiat. *1:* 104. Not of Linnaeus, 1758.
1828. *Otaria stellerii* Lesson, Dict. Class. H.N. *13:* 420.

Genus **ZALOPHUS** Gill, 1866

1866. *Zalophus* Gill, Proc. Essex Inst. *5:* 7, 11. *Otaria gillespii* MacBain = *Otaria californiana* Lesson.

1 species: *Zalophus californianus*, page 323

Zalophus californianus Lesson, 1828 Californian Sea-lion

Approximate distribution of species: Western North America. Recorded from the Kurile Islands by Kuroda (1938) under the name *Eumetopias gillespii*. As *gillespii* is the type species of *Zalophus*, this author, who retains the genus *Zalophus* in his list for another species, could not have been correct in listing this form under *Eumetopias*. A specimen in the British Museum is labelled Japan.

Zalophus californianus Lesson, 1828

1828. *Otaria californiana* Lesson, Dict. Class. H.N. *13:* 420. California.
1858. *Otaria gillespii* MacBain, Proc. Edinb. Roy. Phys. Soc. *1:* 422. California.
(?) 1866. *Otaria japonica* Peters, Mber. Preuss. Akad. Wiss. 668. Japan.
1874. *Eumetopias elongatus* Gray, Proc. Zool. Soc. Lond. 1873: 766. Japan.

Range: Southern Mexico to Northern California, casually to British Columbia (Anderson). ? Japanese seas.

FAMILY ODOBENIDAE

Genus: *Odobenus*, page 324

Genus **ODOBENUS** Brisson, 1762

1762. *Odobenus* Brisson, Regn. Anim. ed. 2, 30. *Odobenus* Brisson = *Phoca rosmarus* Linnaeus.

1766. *Trichechus* Linnaeus, Syst. Nat. 12th ed. *1*: 49. Not of Linnaeus, 1758, which is the Manatee.

1772. *Rosmarus* Brunnich, Zool. Fundamenta, 34, 38–39. *Phoca rosmarus* Linnaeus.

Hopwood, 1947, *P.Z.S.* 533–536, would disregard Brisson and call this genus *Rosmarus* Brunnich. However, *Odobenus* was adopted by Miller, Ognev, Simpson and virtually all recent authors, who use Brisson's names. It is hoped that the International Commission on Zoological Nomenclature will endorse generic names dating from Brisson, 1762, since considerable confusion will be caused if they are all disregarded.

1 species: *Odobenus rosmarus*, page 324

Odobenus rosmarus Linnaeus, 1758 Walrus

Approximate distribution of species: Arctic regions of Eurasia and North America. Has been recorded from the Orkneys, Hebrides and Scotland (where rare); Holland, Denmark, Norway, Sweden. According to Bobrinskii it survives in small numbers in the Spitzbergen Archipelago and the Franz Joseph Islands, rarely off Iceland, coasts of Barents Sea, off Novaya Zemlya, in Kara Sea, Laptev Sea, Severnaya Zemlya, Chukotskoe Sea and extreme north of Bering Sea, as far east as Kamtchatka Peninsula. It is quoted from Japan by Kuroda (Hokkaido and recorded Hondo[1].

ODOBENUS ROSMARUS ROSMARUS Linnaeus, 1758

1758. *Phoca rosmarus* Linnaeus, Syst. Nat. 10th ed. *1*: 38. North Atlantic (Thomas, 1911). Range: from Canada and Greenland eastwards to Novosibirskie Islands.

[1] 1811. *Rosmarus arcticus* Pallas, Zoogr. Ross. Asiat. *1*: 269. Novaya Zemlya. Status *fide* Ognev.

ODOBENUS ROSMARUS DIVERGENS Illiger, 1815

1815. *Trichechus divergens* Illiger, Abh. Akad. Wiss. Berlin, *1804–11:* 68. About 35 miles south of Icy Cape, Alaska.

(?) 1815. *Trichechus obesus* Illiger, *loc. cit.* 64, *nom. nud.*

1831. *Trichechus cookii* Fremery, Bijdrag. Nat. Vetensk. *6:* 385. Off Icy Cape, Alaska (70°06′ N., 163°18′ W.).

(?) 1922. *Trichechus orientalis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 351, *nom. nud.*

Range: Alaska to Eastern Siberia (Bering Sea). Bobrinskii calls the eastern race *O. r. arcticus* Pallas, 1811, which antedates *divergens*, but is a synonym of the typical race according to Ognev.

For North American range of this and the typical race, see Anderson, 1947, *Cat. Canadian Rec. Mamm.* 81.

FAMILY PHOCIDAE

Genera: *Cystophora*, page 333
Erignathus, page 331
Halichoerus, page 332
Monachus, page 332
Phoca, page 327

The subfamilies here admitted follow Simpson.

All species of this family here dealt with occur in the U.S.S.R., and we include a translation (slightly modified) of a key to these species which Bobrinskii gives.

Key to the species of Phocidae, from Bobrinskii, 1944, *Mammals of U.S.S.R.* (Even if Russian is not understood, it is helpful to use this translation in conjunction with the original, since Bobrinskii gives text figures illustrating the characters referred to.)

1. There is a skin pouch on the upper side of the snout which can be inflated, attaining a large size in males. Only one incisor each side in bottom jaw. The premaxillae clearly not reaching the nasals. *CYSTOPHORA CRISTATA*

   No such pouch on upper side of snout. Two incisors each side of bottom jaw. Premaxillae reach the nasals. ——2

2. End of nose covered with hair right up to the nostrils. Claws comparatively small, and on hind limbs frequently missing. Two incisors each side in top jaw. *MONACHUS MONACHUS*

   End of nose hairless or almost so. Claws well developed, and in the forelimbs large and powerful. Three incisors each side in top jaw. ——3

3. Snout very long, so that the distance between tip of nose and eye is almost twice that between the eye and the auditory meatus. Profile of parietals, frontals and nasals form a straight line. *HALICHOERUS GRYPUS*

   Snout much shorter, so that distance between end of nose and the eye is a good deal less than twice that between the eye and auditory meatus. Profile of parietals, frontals and nasals convex. ——4

4. In the forelimbs the longest finger is the third. Vibrissae dense and straight. Length of adults, over 2 m. Four mammae in the female. Jugal short and deep, the depth of the bone not less than half its length.
ERIGNATHUS BARBATUS

The third finger of fore flippers is shorter than the first or second. Vibrissae sparse, and wavy. Body not more than 2.2 m. long. Two mammae in the female. Jugal long and narrow, so that depth of the bone is less than half its length. (Genus *PHOCA*) ——5

5. The bony nasal septum reaches, or almost reaches, the rear edge of the bony palate. Rear edge of bony palate forms a more or less straight line or shallow double arch. Adults, with the exception of some females that have just reached sexual maturity, not spotted, but with large dark and light areas. ——6

The bony nasal septum falls far short of rear edge of bony palate. Rear edge of bony palate forms a high arch, usually pointed at the top. Colouring: generally there are small spots, less frequently the uniformly dark back gradually lightens towards the abdomen. ——7

6. The forelimbs and neighbouring parts of body dark, never any small dark spots on body. Condylobasal length of skull under 200 mm. Bony nasal septum just fails to reach rear edge of bony palate. The upper toothrow is curved, seen from below and from the side (in other words, curved in the horizontal and vertical planes). *PHOCA FASCIATA*

The forelimbs and neighbouring parts of body are light-coloured, and the body sometimes covered with small dark spots; condylobasal length of skull in adults, over 200 mm. The bony nasal septum reaches the rear edge of the bony palate. Upper toothrow not curved. *PHOCA GROENLANDICA*

7. The nasal bones are short and broad, the teeth large and the infraorbital foramen small, its diameter two-thirds to one-third that of the alveolus of the canine tooth (N. Smirnov). Dominant type of colouring: small dark spots on a light background. *PHOCA VITULINA*

The nasal bones are narrow and longer, the teeth small and the infraorbital foramen well developed, of approximately the same diameter as the alveolus of the canine tooth or even larger (N. Smirnov). Colouring different (ring-spots, large spots or uniform colour). ——8

8. Zygomatic arches set in such a way that they cannot be seen when the skull is looked at from behind, being hidden by the brainpan. Adults usually spotted. ——9

Zygomatic arches wide set, so that they are easily visible when the skull is looked at from the back. Colour usually uniform, lightening towards the abdomen, without spots. *PHOCA SIBIRICA*

9. Infraorbital foramen the same size as alveolus of canine tooth. Anterior nasal opening comparatively wide. Adults ring-spotted. *PHOCA HISPIDA*

Infraorbital foramen wider than alveolus of canine tooth. Anterior nasal opening relatively narrow. Colouring: usually dark, comparatively large spots on a light background. *PHOCA CASPICA*

In addition, it may be added that, according to Ognev and as figured by Bobrinskii, the interorbital width is very narrow indeed in the subgenus *Pusa* (*P. hispida* and allies) and much less so in the subgenus *Phoca* (*vitulina*).

Subfamily Phocinae

Genus **PHOCA** Linnaeus, 1758

1758. *Phoca* Linnaeus, Syst. Nat. 10th ed. *1:* 37. *Phoca vitulina* Linnaeus.
1777. *Pusa* Scopoli, Introd. Hist. Nat. 490. *Phoca foetida* Fabricius = *Phoca hispida* Schreber. Valid as a subgenus.
1826. *Callocephalus* F. Cuvier, Dict. Sci. Nat. *39:* 544. *Phoca vitulina* Linnaeus.
1844. *Pagophilus* Gray, Zoology of *Erebus* and *Terror*, 3. *Phoca groenlandica* Erxleben. Valid as a subgenus.
1864. *Halicyon* Gray, P.Z.S. 28. *Halicyon richardii* Gray = *Phoca vitulina richardi*, from Vancouver.
1864. *Pagomys* Gray, P.Z.S. 31. *Phoca foetida* = *Phoca hispida* Schreber.
1866. *Haliphilus* Gray, Ann. Mag. N.H. *17*: 446. *Halichoerus antarcticus* Peale = *Phoca pealei* Gill? = *Phoca vitulina richardii* Gray.
1873. *Histriophoca* Gill, Amer. Nat. *7:* 179. *Phoca fasciata* Zimmermann. Valid as a subgenus.
1904. *Pagophoca* Trouessart, Cat. Mamm. Suppl. 287. Substitute for *Pagophilus* Gray.

Our listing of this genus follows Miller, Simpson and others. It may be noted, however, that Ognev listed *Histriophoca* and *Pagophoca* as full genera. These two seals are strongly differentiated from the more typical subgenus and *Pusa*. Bobrinskii (1944) introduces a new arrangement, in which *Pusa* is synonymous with *Phoca sensu stricto*, and *Pagophoca* is synonymous with *Histriophoca*, the latter being considered as a subgenus of *Phoca*, so that according to that author's views there are two subgenera only in *Phoca*, each with two species (or specific groups, as he keeps the Baikal and Caspian Seals specifically distinct from *P. hispida*).

Our own view is that on account of the difference in palatal structure between the two main divisions in the genus, it might be possible to follow Bobrinskii's arrangement provided *Histriophoca* (*Pagophoca* included in it) were given generic rank. However, we here adopt the customary arrangement. Bobrinskii states that *P. caspica* and *P. sibirica* are very close to *P. hispida*, possibly merely subspecies of it.

6 species in the Palaearctic:

Phoca caspica, page 330
Phoca fasciata, page 330
Phoca groenlandica, page 330
Phoca hispida, page 328
Phoca sibirica, page 330
Phoca vitulina, page 328

Subgenus *PHOCA* Linnaeus, 1758

Phoca vitulina Linnaeus, 1758 Common Seal

Approximate distribution of species: Sandy coasts from Spain and British Isles including Ireland along North-Western European coasts (France, Germany, Holland) to Denmark, Norway, the Baltic, Russia (including Novaya Zemlya, Murman coast (where rare), Barents Sea). Eastern Siberia (Chukotskoe Sea, Bering Sea, Okhotsk Sea). Japan, Korea. Various parts of North America, Greenland included (for details see Anderson, 1947, *Canadian Recent Mammals*, 78).

Phoca vitulina vitulina Linnaeus, 1758

1758. *Phoca vitulina* Linnaeus, Syst. Nat. 10th ed. *1:* 38. Gulf of Bothnia, Northern Baltic (Thomas, 1911). (Where the animal does not now occur (Bobrinskii).)
1811. *Phoca canina* Pallas, Zoogr. Ross. Asiat. *1:* 114.
1820. *Phoca variegata* Nilsson, Skand. Faun. *1:* 359. New name for *Phoca vitulina* Fabricius.
1824. *Phoca scopulicola* Thienemann, Nat. Bemerk. Reise Europa, *1:* 59, pl. 5. Iceland.
1824. *Phoca littorea* Thienemann, *loc. cit.* ? Northern Russia.
1828. *Phoca linnaei* Lesson, Dict. Class. H.N. *13:* 415.
1828. *Phoca thienemannii* Lesson, Dict. Class. H.N. *13:* 414. New name for *P. scopulicola* Thienemann.

Range: European range of species.

Phoca vitulina largha Pallas, 1811

1811. *Phoca largha* Pallas, Zoogr. Ross. Asiat. *1:* 113. Eastern part of Kamtchatka.
1828. *Phoca chorisii* Lesson, Dict. Class. H.N. *13:* 417. Kamtchatka.
1844. *Phoca nummularis* Temminck, Fauna Japon. 3. Japan.
(?) 1864. *Halicyon richardii* Gray, P.Z.S. 28. Vancouver Island, British Columbia. A synonym, according to Ognev. Queried by G. Allen as occurring on eastern Chinese coasts.
1902. *Phoca ochotensis* J. Allen, Bull. Amer. Mus. N.H. *16:* 480. Not of Pallas, 1811. Mouth of Gichiga River, Okhotsk Sea, Eastern Siberia.
1902. *Phoca ochotensis macrodens* J. Allen, Bull. Amer. Mus. N.H. *16:* 483. Avatcha Bay, Kamtchatka.
1902. *Phoca stejnegeri* J. Allen, Bull. Amer. Mus. N.H. *16:* 485. Bering Island, Eastern Siberia.
1935. *Phoca vitulina largha* natio *pallasii* Naumov & Smirnov, Trans. Inst. Fish. Oceanogr. Moscow, *3:* 177. Sea of Okhotsk.
1941. *Phoca petersi* Mohr, Zool. Anz. Leipzig, *133:* 49. Coast of Korea.

Range: Eastern Siberia, Japan, Korea, apparently Western North America.

Subgenus *PUSA* Scopoli, 1777

Phoca hispida Schreber, 1775 Ringed Seal

Approximate distribution of species: Northern Europe, U.S.S.R. eastwards to Sakhalin and Japan, and Arctic North America (for some details see Anderson, 1947,

Canadian Recent Mammals, 79). Russian localities include the White Sea, Bering Sea, Sea of Okhotsk and Tatarsk Strait (also, according to Ognev, Taimyr Peninsula and New Siberian Islands); also the Baltic Sea, including Gulfs of Bothnia and Finland (it swims up the Neva to Leningrad), Lake Ladoga and some Finnish lakes (Lake Saima and others near it). Has been recorded from Novaya Zemlya, Iceland, Spitzbergen; rare visitor to France, Germany, Denmark, Holland, British Isles (recorded from Norfolk and several places in Scotland); Norway.

PHOCA HISPIDA HISPIDA Schreber, 1775

1775. *Phoca hispida* Schreber, Säugeth. *3:* pl. 86 (text, 1776, *3:* 312). Coasts of Greenland and Labrador.

1776. *Phoca foetida* Fabricius, Müller, Zool. Danicae Prodr., viii; 1780, Fauna Groenlandica, 13. Greenland.

1820. *Phoca annellata* Nilsson, Skand. Faun. *1:* 365. New name for *foetida* Fabricius, 1776.

(?) 1921. *Pusa hispida pygmaea* Zukowsky, Arch. Naturgesch. *87A*, 10: 183. ? Greenland and Novaya Zemlya.

PHOCA HISPIDA BOTNICA Gmelin, 1788

1788. *Phoca vitulina botnica* Gmelin, Linn. Syst. Nat. 13th ed. *1:* 63. Gulf of Bothnia, Baltic Sea.

1839. *Phoca communis* var. *octonata* Kutorga, Bull. Soc. Nat. Moscow, 185, 189. No locality.

1839. *Phoca communis* var. *undulata* Kutorga, Bull. Soc. Nat. Moscow, 185, 191. No locality.

PHOCA HISPIDA OCHOTENSIS Pallas, 1811

1811. *Phoca ochotensis* Pallas, Zoogr. Ross. Asiat. *1:* 117. Northern part of Okhotsk Sea, between Tamis Bay and Gichiga, Eastern Siberia.

1902. *Phoca (Pusa) hispida gichigensis* J. Allen, Bull. Amer. Mus. N.H. *16:* 478. Gichiga, Okhotsk Sea, Eastern Siberia.

PHOCA HISPIDA SAIMENSIS Nordquist, 1899

1899. *Phoca foetida* var *saimensis* Nordquist, Acta Soc. Fauna Flor. Fenn. *15*, 7: 28. Lake Saima, Finland.

PHOCA HISPIDA LADOGENSIS Nordquist, 1899

1899. *Phoca foetida* var. *ladogensis* Nordquist, Acta Soc. Fauna Flor. Fenn. *15*, 7: 33. Lake Ladoga (Finnish-Russian border).

PHOCA HISPIDA POMORORUM Smirnov, 1929

1929. *Phoca hispida pomororum* Smirnov, C.R. Acad. Leningrad, 95. Barents Sea: west coast Novaya Zemlya.

1929. *Phoca hispida pomororum* natio *rochmistrovi* Smirnov, *loc. cit.* 95. Sumski Posad, western coast of White Sea, Northern Russia.

PHOCA HISPIDA BIRULAI Smirnov, 1929

1929. *Phoca hispida birulai* Smirnov, C.R. Acad. Leningrad, 96. New Siberian Islands; Liakhov Island.

PHOCA HISPIDA KRASCHENINIKOVI Naumov & Smirnov, 1935

1935. *Phoca hispida kraschenikovi* Naumov & Smirnov, Trans. Inst. Fish. Oceanogr. Moscow, *3:* 182. Bering Sea, Eastern Siberia.

Phoca caspica Gmelin, 1788 Caspian Seal

Approximate distribution of species: Caspian Sea, "distributed all over the Caspian Sea but collects in different parts of it according to the time of year" (Bobrinskii).

PHOCA CASPICA Gmelin, 1788

1788. *Phoca vitulina* var. *caspica* Gmelin, Syst. Nat. 13th ed. *1:* 64. Caspian Sea.

Phoca sibirica Gmelin, 1788 Baikal Seal

Approximate distribution of species: Lake Baikal, Eastern Siberia.

PHOCA SIBIRICA Gmelin, 1788

1788. *Phoca vitulina* var. *sibirica* Gmelin, Syst. Nat. 13th ed. *1:* 64. Lakes Baikal and Oron.

1873. *Phoca baicalensis* Dybowski, Arch. Anat. Physiol. Lpz. 109. Lake Baikal.

1922. *Phoca oronensis* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 352, *nom. nud.* Lake Oron (right bank of Witim, Govt. of Yakutsk, about 57½° N., 117° E.). (According to Ognev (1935) there is no seal in this lake.)

Subgenus *HISTRIOPHOCA* Gill, 1873

Phoca fasciata Zimmermann, 1783 Ribbon Seal

Approximate distribution of species: Kurile Islands, Tatarsk Strait, Sea of Okhotsk, Bering Sea and Chukotskoe Sea, penetrates into eastern part of East Siberian Sea; everywhere rare (Bobrinskii). To Alaska. Has been recorded from Hokkaido (Kuroda).

PHOCA FASCIATA Zimmermann, 1783.

1783. *Phoca fasciata* Zimmermann, Geogr. Gesch. *3:* 277. Kurile Islands, north of Japan.

1831. *Phoca equestris* Pallas, Zoogr. Ross. As. *1:* 111.

Subgenus *PAGOPHILUS* Gray, 1844

Phoca groenlandica Erxleben, 1777 Harp Seal (Greenland Seal)

Approximate distribution of species: Northern Europe, Russia, Western Siberia and northern North America (see Anderson, 1947, *Canadian Recent Mammals*, 79, for

Nearctic range). Iceland, Spitzbergen, Jan Meyen Island districts, White Sea, Kara Sea, Cheshskaya Bay (Northern Russia); rare wanderer to British Isles, France and Holland. The Eastern Siberian limit is Severnaya Zemlya (Bobrinskii). Range includes Norway.

PHOCA GROENLANDICA GROENLANDICA Erxleben, 1777

1777. *Phoca groenlandica* Erxleben, Regn Anim. *1:* 588. Greenland and Newfoundland.
1785. *Phoca semilunaris* Boddaert, Elench. Anim. 170. Greenland, Iceland.
(?) 1822. *Phoca albicauda* Desmarest, Mamm. 541. No locality.
(?) 1824. *Phoca leucopla* Thienemann, Nat. Bemerk. Reise Europe, *1:* 102, pl. 13. A few miles north of Grimsey Island, north of Iceland. Thienemann says that the type specimen of *leucopla* was found in a herd of several hundred *Phoca groenlandica* and thinks it was just an individual variation.
1851. *Phoca albini* Alessandrini, Mem. R. R. Accad. Bologna, *2:* 158.

PHOCA GROENLANDICA OCEANICA Lepechin, 1778

1778. *Phoca oceanica* Lepechin, Acta Ac. Petrop. *1777*, 1: 259, pls. 6 and 7. White Sea, Northern Russia.
1811. *Phoca dorsata* Pallas, Zoogr. Ross. As. *1:* 112.

Genus **ERIGNATHUS** Gill, 1866

1866. *Erignathus* Gill, Proc. Essex Inst. *5:* 5, 9. *Phoca barbata* Erxleben.

1 species: *Erignathus barbatus*, page 331

Erignathus barbatus Erxleben, 1777 Bearded Seal

Approximate distribution of species: Northern Eurasia, east to Sakhalin and rarely Hokkaido, Japan. North America, from Bering Sea to Greenland. Said to have been recorded from Norfolk, England, and from Scotland (River Beauly); Norway. In U.S.S.R., White Sea, all along the European and Asiatic coast of the Arctic Ocean, off all the islands of the Arctic Ocean, and in the Bering Sea and Sea of Okhotsk as far south as Tatarsk Strait; it sometimes swims a few kilometres up rivers (Bobrinskii). Iceland, Spitzbergen, Franz Josef Land, Jan Mayen Island.

ERIGNATHUS BARBATUS BARBATUS Erxleben, 1777

1777. *Phoca barbata* Erxleben, Syst. Regn. Anim. *1:* 590. Type locality restricted to Southern Greenland by Ognev, 1935.
1778. *Phoca leporina* Lepechin, Acta Ac. Petrop. *1777*, 1: 264, pl. 8. White Sea.
1828. *Phoca parsonsii* Lesson, Dict. Class. H.N. *13:* 414. Northern Seas.
1828. *Phoca lepechenii* Lesson, *loc. cit.* 415. Renaming of *leporina.*

ERIGNATHUS BARBATUS NAUTICUS Pallas, 1811

1811. *Phoca nautica* Pallas, Zoogr. Ross. As. *1:* 108. Okhotsk Sea, Eastern Siberia.
1811. *Phoca albigena* Pallas, *loc. cit.* 109. Kamtchatka.

Genus **HALICHOERUS** Nilsson, 1820

1820. *Halichoerus* Nilsson, Skand. Fauna, Dagg. Djur. *1:* 376. *Halichoerus griseus* Nilsson = *Phoca grypus* Fabricius.

1 species: *Halichoerus grypus*, page 332

Halichoerus grypus Fabricius, 1791 Grey Seal

Approximate distribution of species: Europe, from British Isles northward, Russia and in North America (for American range see Anderson, 1947, *Canadian Recent Mammals*, 80). Novaya Zemlya, Barents Sea, Murman coast, neck of White Sea, Baltic Sea (including Finland, Gulf of Bothnia), Norway, England (rocky parts of west coast), Scotland, Ireland, Orkneys, Shetlands, Hebrides, Faroe Islands, Scilly Islands.

Halichoerus grypus Fabricius, 1791

1791. *Phoca grypus* Fabricius, Skrivter af Naturhist. Selskabet, Copenhagen, *1*, 2: 167, pl. 13, fig. 4. Greenland.
1820. *Halichoerus griseus* Nilsson, Skand. Fauna, Dagg. Djur. *1:* 377. Greenland.
1824. *Phoca halichoerus* Thienemann, Nat. Bemerk. nördl. Reise Europa, *1*: 142. Norway.
1851. *Halichoerus macrorhynchus* Hornschuch & Schilling, Arch. Naturgesch. *17*, 2: 28. Baltic Sea.
1851. *Halichoerus pachyrhynchus* Hornschuch & Schilling, *loc. cit.* Baltic Sea.
1886. *Halichoerus grypus* var. *atlantica* Nehring, S.B. Ges. Nat. Fr. Berlin, 122. West coast of Norway.
1886. *Halichoerus grypus* var. *baltica* Nehring, *loc. cit.* Baltic.

Subfamily M o n a c h i n a e

Genus **MONACHUS** Fleming, 1822

1822. *Monachus* Fleming, Philos. Zool. *2:* 187 (footnote). *Phoca monachus* Hermann.
1824. *Pelagios* F. Cuvier, Mém. Mus. H.N. Paris, *11:* 196. *Phoca monachus* Hermann.
1841. *Pelagocyon* Gloger, Gemeinn. Naturgesch. *1*, xxxiv, 163. *Pelagocyon monachus* = *Phoca monachus* Hermann.
1848. *Rigoon* Gistl, Nat. Thierr. fur höhere Schulen, x. New name for *Pelagios* F. Cuvier.
1854. *Heliophoca* Gray, Ann. Mag. N.H. *13:* 201. *Heliophoca atlantica* Gray = *Phoca monachus* Hermann.

1 species in the area covered by this list:

Monachus monachus, page 333

Monachus monachus Hermann, 1779 Monk Seal

Approximate distribution of species: Atlantic (Madeira, Canaries and Southern Rio de Oro); Mediterranean, formerly most coasts but now restricted to parts of Morocco, Cyrenaica, Corsica, islands in the Southern Adriatic and off Greece, Crete, ? Egypt, Palestine and the Lebanon; Black Sea (Cape Kaliakra in Rumania and Sosopolis in Bulgaria, and perhaps the eastern shore).

Monachus monachus Hermann, 1779

1779. *Phoca monachus* Hermann, Beschäf. Berlin Ges. Naturf. Freunde, *4:* 501, pls. 12, 13. Mediterranean Sea.
1785. *Phoca albiventer* Boddaert, Elench. Anim. 170. Adriatic Sea.
1800. *Phoca bicolor* Shaw, Gen. Zool. *1*, 2: 254. Adriatic Sea.
1816. *Phoca leucogaster* Péron & Lesueur, Voy. aux Terres Austr. *2:* 47 (footnote). Nimes, Southern France.
1828. *Phoca hermannii* Lesson, Dict. Class. H.N. *13:* 416. Adriatic Sea.
1838. *Monachus mediterraneus* Nilsson, K. Svenska Vet. Ak. Handl. *1837:* 238. Adriatic Sea and Greek Archipelago.
(?) 1843. *Phoca isidorei* Lesson, Echo Monde Savant, 6 August, 10: 228. Isle of Oléron, Western France.
1854. *Heliophoca atlantica* Gray, Ann. Mag. N.H. *13:* 202. Deserta Grande Island, Madeira group.

Subfamily Cystophorinae

Genus **CYSTOPHORA** Nilsson, 1820

1820. *Cystophora* Nilsson, Skand. Fauna, Dagg. Djur. *1:* 382. *Cystophora borealis* Nilsson = *Phoca cristata* Erxleben.
1826. *Stemmatopus* F. Cuvier, Dict. Sci. Nat. *39:* 550. *Stemmatopus cristatus* Cuvier = *Phoca cristata* Erxleben.
1911. *Cystophoca* Brass, Aus dem Reiche der Pelze, 668. Renaming of *Cystophora.*

1 species: *Cystophora cristata*, page 333

Cystophora cristata Erxleben, 1777 Hooded Seal (Bladdernose)

Approximate distribution of species: Arctic Europe, Asia and North America (see Anderson, 1947, *Canadian Recent Mammals*, 80, for Nearctic range). ". . . the deep part of the North-Western Atlantic (where it is commonest) and adjoining areas of the Arctic Ocean, i.e. it extends from Newfoundland, Labrador and Greenland to Spitzbergen and Bear Island, east of which—in the shallower part of Barents Sea—it only occurs in certain years and in small numbers. Separate individuals, however, sometimes swim great distances: one specimen was caught in the Yenesei, near Yeneseisk" (Bobrinskii). Has been recorded also from Norway, France, British Isles, Portugal (Santos, 1936), and during migrations to Danish Straits.

CYSTOPHORA CRISTATA Erxleben, 1777

1777. *Phoca cristata* Erxleben, Syst. Regn. Anim. *1:* 590. Southern Greenland and Newfoundland.

1820. *Cystophora borealis* Nilsson, Skand. Fauna. Dagg. Djur. *1:* 383. Locality as above, based on Gmelin, 1788 *cristata*, and in turn Erxleben, 1777.

1823. *Phoca mitrata* G. Cuvier, Oss. Foss. *5:* 210.

ORDER HYRACOIDEA

FAMILY: Procaviidae, page 334

FAMILY PROCAVIIDAE

Genus: *Procavia*, page 334

On this family, see particularly Hahn, 1934, Die Familie der Procaviidae, *Z. Säuget. 9:* 207–358. Flower and Lydekker recognized two genera in this family, *Procavia* and *Dendrohyrax*, characterized by differences in dentition. Although some authors refer all Hyraxes to one genus *Procavia*, there is considerable evidence in the material examined that *Dendrohyrax* is valid. It has brachyodont cheekteeth, and in fully adult skulls the three upper molars are normally a little shorter than, or subequal to, the four premolars. *Procavia* has hypsodont cheekteeth, and in fully adult skulls the three upper molars are normally clearly longer than the four premolars. Hahn and other authors recognize a third genus, *Heterohyrax*, which does not differ from *Dendrohyrax* in dentition, but which has the orbit not ringed by bone, whereas *Dendrohyrax* usually has it ringed by bone. But as the character is not strictly constant in South African *Dendrohyrax*, it is difficult to see how *Heterohyrax* could be more than a subgenus of *Dendrohyrax*. Hahn retained four species in *Procavia*, two of which, *habessinica* and *ruficeps*, are supposed to occur in the Palaearctic region. He gives very little evidence that these two species are in reality morphologically definable when compared with the earliest named *Procavia capensis* from the Cape. One of us (T. C. S. M.-S.) has not found his characters of the first lower premolar constant in *habessinica* races; his measurements of the skulls and teeth for the three species overlap; and until the contrary is proved, we prefer to regard both the supposed northern species as further races of *P. capensis*.

Genus **PROCAVIA** Storr, 1780

1780. *Procavia* Storr, Prodr. Meth. Mamm. 40, pl. B. *Cavia capensis* Pallas.

1783. *Hyrax* Hermann, Tabl. Affin. Anim. 115. *Cavia capensis* Pallas.

1868. *Euhyrax* Gray, Ann. Mag. N.H. *1:* 46. *Hyrax habessinicus* Hemprich & Ehrenberg.

1 species in the area covered by this list:

Procavia capensis, page 335

Procavia capensis Pallas, 1766 Hyrax, "Cony" or Dassie

Approximate distribution of species (as here understood): Arabia, Palestine, Sinai, Syria; Algeria; Libya. From Somaliland, Sudan, Northern Nigeria, Asben and Senegal southwards to Cape Town, George and Albany districts in Cape Province, where it is very common.

(Procavia capensis capensis Pallas, 1766. Extralimital)

1766. *Cavia capensis* Pallas, Zool. Misc. 30, pl. 3. Cape of Good Hope.

Procavia capensis syriaca Schreber, 1784

1784. *Hyrax syriacus* Schreber, Säugeth. pl. 240B: 1792, *4:* 923. Mt. Lebanon, Syria. (See Moreau, Hopkins & Hayman, 1946, P.Z.S. *115:* 431.)

1868. *Hyrax sinaiticus* Gray, Ann. Mag. N.H. *1:* 45. Locality not given; probably Mt. Sinai, Sinai Peninsula.

1917. *Procavia sinaitica ehrenbergi* Brauer, S.B. Ges. Nat. Fr. Berlin, 301. El Tor, near Wadi Timar, Sinai.

1917. *Procavia sinaitica schmidtzi* Brauer, *loc. cit.* 302. Mountain of Bteha Plain, north of Lake Galilee, Palestine.

Hahn (1934) restricted *syriacus* Schreber to Abyssinia, for the same reason that Gray had done, namely because Schreber quotes largely from Bruce in describing this hyrax and also having regard to their interpretation of Schreber's plate. But we agree with Thomas (1892) that Schreber clearly intended the Syrian form as well as the Abyssinian form, and that both from the text and from the title "Der syrische Klippschliefer" there is every ground for including the Syrian form under *syriacus* rather than excluding it, and we agree that Mt. Lebanon was rightly selected as the type locality. As no member of the subgenus *Heterohyrax* is known to occur in Asia, the earliest name for that wholly African group will be *Hyrax brucei* Gray, 1868, from Abyssinia. The type of *Heterohyrax* should be quoted as *Dendrohyrax blainvillii* Gray = *Hyrax brucei* Gray.

Procavia capensis burtoni Gray, 1868

1868. *Hyrax burtonii* Gray, Ann. Mag. N.H. *1:* 43. "Egypt." Probably extralimital (Sudanese) but might occur in extreme Southern Egypt.

Procavia capensis jayakari Thomas, 1892

1892. *Procavia syriaca jayakari* Thomas, P.Z.S. 63. Dofar, Southern Arabia.

Procavia capensis bounhioli Kollman, 1912

1912. *Procavia bounhioli* Kollman, Bull. Mus. H.N. Paris, *18:* 281. Ahaggar, Sahara Desert, Algeria.

1932. *Procavia (Heterohyrax) antineae* Heim de Balsac & Bégouen, Bull. Mus. H.N. Paris, 2, *4:* 479. Ahaggar, Algeria.

(G. Allen (1939) follows Hahn in listing the last form as a synonym of *bounhioli* on p. 451, but lists it as a distinct species of *Heterohyrax* on p. 445.)

ORDER PROBOSCIDEA

FAMILY: Elephantidae, page 336

FAMILY ELEPHANTIDAE

Genus: *Elephas*, page 336

Genus **ELEPHAS** Linnaeus, 1758

1758. *Elephas* Linnaeus, Syst. Nat. 10th ed. *1:* 33. *Elephas maximus* Linnaeus.

1 species: *Elephas maximus*, page 336

Elephas maximus Linnaeus, 1758 — Indian Elephant

Approximate distribution of species: Ceylon, India (range modified by human agency and domestication); Blanford (1891) stated that elephants occurred wild along the base of the Himalayas as far west as Dehra Dun and in places in the great forest country between the Ganges and Kistna, in the Western Ghats and Mysore. Assam, Burma, Siam, Cochin-China. Malay States, Sumatra. (Introduced in Borneo. Deraniyagala, 1950, *Proc. 5th Ann. Session Ceylon Assoc. Sci.* 10, quotes Laufer (1925) as evidence for the elephant being certainly indigenous in Borneo, but an examination of Laufer does not bear this out.)

On the races, see Pocock, 1943, *Ann. Mag. N.H. 10:* 273, and Chasen, 1940, *Handlist Malaysian Mammals*, 190 (footnote).

Elephas maximus maximus Linnaeus, 1758

1758. *Elephas maximus* Linnaeus, Syst. Nat. 10th ed. *1:* 33. Ceylon.

1940. *Elephas maximus vilaliya* Deraniyagala, J. Roy. Asiat. Soc. Ceylon Branch, *34*, 91: 130, fig. 1, 6. Manampitiya, in the flood plain of Mahavili River, Eastern Ceylon. Status *fide* Pocock.

Elephas maximus indicus G. Cuvier, 1797

1797. *Elephas indicus* Cuvier, Tabl. Élém. H.N. 148. Ceylon. Sherborn dates *indicus* Cuvier from Mém. Inst. Paris, *2:* 21, of 1798 (27 September), but this is antedated by *indicus* Cuvier, Tabl. Élém. H.N. 148, which was noticed on 24 December 1797, and therefore published some time before that date.

? 1797. *Elephas asiaticus* Blumenbach, Hand. Naturg. ed. 5, 124. "Asia, chiefly Ceylon."

1845. *Elephas indicus bengalensis* Blainville, Ostéogr. Mamm. 353, pl. iii. Bengal.

1916. *Elephas maximus maximus* of Lydekker, Cat. Ungulates B.M. *5:* 82; not of Linnaeus, 1758.

Range: the mainland range of the species. Pocock calls the mainland elephants *E. m. bengalensis* and it is not clear why he discards the earlier name *indicus*.

Elephas maximus ceylanicus Blainville, 1845

1845. *Elephas indicus ceylanicus* Blainville, Ostéogr. Mamm. 353, pl. iii. Ceylon.

ORDER SIRENIA

FAMILY: Dugongidae, page 337

There are two living families, but only one of them comes into our region.

FAMILY DUGONGIDAE

See Pocock, 1940, Some Notes on the Dugong, *Ann. Mag. N.H. 5:* 329.

Genus: *Dugong*, page 337

Genus **DUGONG** Lacepède, 1799

1799. *Dugong* Lacepède, Tabl. Mamm. 17. *Dugong indicus* Lacepède.
1803. *Platystomus* Fischer, Nat. Mus. Paris, *2:* 353. *Platystomus dugong* Gmelin = *Trichechus dugon* Müller. Not *Platystoma* Meigen, 1803, an insect.
1808. *Dugungus* Tiedemann, Zoologie, *1:* 554. Emendation.
1811. *Halicore* Illiger, Prodr. Syst. Mamm. et Avium, 140. *Trichechus dugong* Gmelin = *Trichechus dugon* Müller.
1821. *Dugongidus* Gray, London Med. Repos. *15:* 309. *Trichechus dugon* Müller.

1 species: *Dugong dugon*, page 337

Dugong dugon Müller, 1776 Dugong

Approximate distribution of species: has been recorded from seas of Portuguese East Africa, Madagascar, Mafia Island (off Tanganyika), Kenya, the Red Sea, coasts of Malabar, India, Ceylon, the Andaman Islands and Mergui Archipelago, Liukiu Is., Formosa, Malaysian Seas, Philippine Islands, and to Northern Australia. Doubtless exterminated in some of these places.

Dugong dugon Müller, 1776

1776. *Trichecus* (sic) *dugon* Müller, Linné's Vollständingen Natursyst. Suppl. 21. Cape of Good Hope to the Philippines.
1777. *Trichechus dugung* Erxleben, Syst. Regn. Anim. 599.
1799. *Dugong indicus* Lacepède, Tabl. Mamm. 17. Indian Ocean.
1811. *Halicore dugong* Illiger, Prodr. Syst. Mamm. et Avium, 141.
1833. *Halicore hemprichii* Ehrenberg, in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* folio k (footnote). Barkan Island, Red Sea.
1833. *Halicore lottum* Ehrenberg, in Hemprich & Ehrenberg, *loc. cit.* Hauakal Island, southern part of Red Sea.
1834. *Halicore tabernaculi* Rüppell, Mus. Senckenburgianum, *1:* 113, pl. 6. Red Sea (based on a skeleton found on Maxud Island).
1877. *Halicore cetacea* Heuglin, Reise in Nordöst. Afr. *2:* 135. Red Sea.

The name *hemprichii* is available if the Red Sea race can be proved distinct from that of the Indian Ocean. G. Allen lists it as a synonym of *dugon;* but Pocock, (1940, 330) does not feel justified in adding *hemprichi* definitely to the synonymy of *dugon.*

ORDER PERISSODACTYLA

FAMILIES: Equidae, page 340
Rhinocerotidae, page 339
Tapiridae, page 338

This is a relict order, with many fossil families and genera but only a handful of surviving species. Simpson (1945) divided the existing Perissodactyla into two suborders, the Hippomorpha for the Equidae, and the Ceratomorpha for the Tapiridae and Rhinocerotidae. Each of the last-named families is the type of a distinct superfamily. Blanford, 1891, *Fauna of British India*, 468–479, gives short summaries of the main differences between the families and most of the species of Asiatic Perissodactyla.

SUBORDER CERATOMORPHA

FAMILY TAPIRIDAE

Genus: *Tapirus*, page 338

Genus **TAPIRUS** Brisson, 1762

1762. *Tapirus* Brisson, Regn. Anim. 81–82. *Tapirus terrestris* Brisson = *Hippopotamus terrestris* Linnaeus, from Brazil. Hopwood, 1947, P.Z.S. *117*, 533–536, would disregard Brisson and date *Tapirus* from Brunnich, 1771, Zool. Fundamenta, 44, 45, with type *Hippopotamus terrestris* Linnaeus.
1779. *Tapir* Blumenbach, Handbuch Naturg. *1:* 129.
1830. *Rhinochoerus* Wagler, Syst. Nat. Amphib. 17. Substitute for *Tapirus* Brisson.
1872. *Tapyra* Liais, Climats Geol. 397. Emendation of *Tapirus*.
1913. *Acrocodia* Goldman, Proc. Biol. Soc. Washington, *26:* 65. *Tapirus indicus* Desmarest. Valid as a subgenus.

1 species in Asia:
Tapirus indicus, page 338

We follow Simpson in referring all living tapirs to one genus, but differences in the cranium, and in the colour pattern of the adults, seem to justify subgeneric distinction between the Asiatic species and its South American allies.

Subgenus *ACROCODIA* Goldman, 1913

Tapirus indicus Desmarest, 1819 — Malayan Tapir

Approximate distribution of species: Sumatra and Malay Peninsula, as far north as the Burmo-Siamese borders in latitude 18° N.

TAPIRUS INDICUS Desmarest, 1819

1819. *Tapirus indicus* Desmarest, Nouv. Dict. H.N. *32:* 458. Malay Peninsula. Range: as above.

FAMILY RHINOCEROTIDAE

Genera: *Didermocerus*, page 340
Rhinoceros, page 339

The prior generic name for the Asiatic Two-horned Rhinoceros is *Didermocerus* Brookes, 1828. Simpson (1945) calls this *Dicerorhinus*, and suggests, somewhat half-heartedly, that the name *Didermocerus* may conveniently be dropped, on the ground of its publication in a sale catalogue. This in itself is no bar to "publication" within the meaning of the *Règles*, and the catalogue was on sale to the public for half a crown. Moreover, Simpson adopts *Acinonyx*, which appears in the same publication.

Simpson (1945) lists the living rhinoceroses in two subfamilies: the "Dicerorhininae" with *Dicerorhinus* (= *Didermocerus*), *Ceratotherium* and *Diceros*; and the Rhinocerotinae with *Rhinoceros*. But this arrangement, as Pocock, 1945, *P.Z.S. 114:* 437, points out, gives undue importance to the possession of two horns or one, and obscures the fact that in cranial and dental characters the Asiatic rhinoceroses clearly form one group and the African ones another. We therefore follow Pocock in dividing the living rhinoceroses into the Rhinocerinae (or Rhinocerotinae, as the word should have been formed) with *Rhinoceros* and *Didermocerus*, and the Dicerinae (or Dicerotinae) with *Diceros* and *Ceratotherium*. Pocock (1945, 449) gives a key based on this arrangement.

Subfamily Rhinocerotinae

Genus **RHINOCEROS** Linnaeus, 1758

1758. *Rhinoceros* Linnaeus, Syst. Nat. 10th ed. *1:* 56. *Rhinoceros unicornis* Linnaeus.
1867. *Eurhinoceros* Gray, P.Z.S. 1009. *Rhinoceros unicornis* Linnaeus.

2 species: *Rhinoceros sondaicus*, page 340
Rhinoceros unicornis, page 339

For key to these species, see Blanford (1891, 472).

Rhinoceros unicornis Linnaeus, 1758 Great One-horned Rhinoceros

Approximate distribution of species: Nepal, Bihar, Bengal Duars, Cooch Behar, Assam. Becoming rare.

Rhinoceros unicornis Linnaeus, 1758

1758. *Rhinoceros unicornis* Linnaeus, Syst. Nat. 10th ed. *1:* 56. Probably the sub-Himalayan Terai of Assam (Lydekker).
1817. *Rhinoceros indicus* Cuvier, Règn. Anim. *1:* 239.
1830. *Rhinoceros asiaticus* Blumenbach, Hand. Naturg. ed. 12, 107. No locality given.
1867. *Rhinoceros stenocephalus* Gray, P.Z.S. 1018. Asia.

Rhinoceros sondaicus Desmarest, 1822 Lesser One-horned Rhinoceros

Approximate distribution of species: Burma, Siam, Cochin-China, Malay States, Sumatra, Java. Now a rare animal.

Rhinoceros sondaicus Desmarest, 1822

1822. *Rhinoceros sondaicus* Desmarest, Mammalogie, *2:* 399. Java.
1840. *Rhinoceros inermis* Lesson, Compl. de Buffon, *1:* 514. Sunderbans, mouths of the Ganges, India. *nom. nud., fide* Sherborn.
1868. *Rhinoceros floweri* Gray, P.Z.S. 1867: 1015. Sumatra (not in Chasen's list, 1940).

See Loch, 1937, The Javan or Lesser One-horned Rhinoceros and its geographical distribution, *J. Malayan Branch R. Asiat. Soc. 15,* 2: 130.

Genus **DIDERMOCERUS** Brookes, 1828

1828. *Didermocerus* Brookes, Cat. Anat. Zool. Museum of J. Brookes, London, 75. *Didermocerus sumatrensis* = *Rhinoceros sumatrensis* Fischer.
1841. *Dicerorhinus* Gloger, Handbuch Naturgesch. 125. *Rhinoceros sumatrensis* Cuvier.
1868. *Ceratorhinus* Gray, P.Z.S. 1867: 1021. *Rhinoceros sumatrensis* Cuvier.

1 species: *Didermocerus sumatrensis*, page 340

Didermocerus sumatrensis Fischer, 1814 Asiatic Two-horned Rhinoceros

Approximate distribution of species: ? Assam, Burma, Siam, ? Indo-China, Malay States, Sumatra, Borneo. Becoming a rare animal.

(Didermocerus sumatrensis sumatrensis Fischer, 1814. Extralimital)

1814. *Rhinoceros sumatrensis* Fischer, Zoogn. *3:* 301. Sumatra. Range: Sumatra and Borneo.

Didermocerus sumatrensis lasiotis Buckland, 1872

1872. *Rhinoceros lasiotis* Buckland, Land and Water, 10 August. See Harper, 1940, J. Mammal. *21:* 201. South of Chittagong, Eastern Bengal.
(?) 1854. *Rhinoceros crossii* Gray, P.Z.S. 251. Locality unknown. (Based on a horn which could equally well have come from an African rhinoceros.)
1873. *Ceratorhinus niger* Gray, Ann. Mag. N.H. *11:* 357, pl. 11. Malacca. Not of Schinz, 1845.
1873. *Ceratorhinus blythii* Gray, Ann. Mag. N.H. *11:* 360. Tenasserim.

Range: ? Assam, Burma, Siam, ? Indo-China, Malay States.

suborder Hippomorpha

FAMILY EQUIDAE

Genus: *Equus*, page 341

Genus **EQUUS** Linnaeus, 1758

1758. *Equus* Linnaeus, Syst. Nat. 10th ed. *1:* 73. *Equus caballus* Linnaeus, the domestic Horse.
1762. *Asinus* Brisson, Regn. Anim. 70. *Equus asinus* Linnaeus. Valid as a subgenus.
1762. *Onager* Brisson, Regn. Anim. 72. *Equus asinus* Linnaeus.
1824. *Asinus* Gray, Zool. Journ. *1:* 244. *Equus asinus* Linnaeus.
1924. *Microhippus* Matschie, S.B. Ges. Nat. Fr. Berlin, *1922*: 68. *Microhippus tafeli* Matschie = *Equus kiang* Moorcroft.

Simpson also quotes a name, *Hemionus* Cuvier, 1823. The only reference we have so far traced is *Hemionus* Cuvier, 1821, *Dict. Sci. Nat.* 555, which seems to be a trivial, not a generic name.

There are other, extralimital (African) subgeneric names.

For the geographical distribution of recent Equidae see Antonius, 1938, *P.Z.S. 107B:* 557.

2 species in Asia:

Equus hemionus, page 341
Equus przewalskii, page 341

For key to these species, see G. Allen, 1940, *Mammals of China and Mongolia, 2:* 1281. Bobrinskii (1944) refers *hemionus* to the subgenus *Asinus*, but this is more usually restricted to *Equus asinus* Linnaeus which now occurs as a wild animal only in Eastern Africa (Sudan, Somaliland).

Equus przewalskii Poliakov, 1881 — Przewalski's Horse, Tarpan

Approximate distribution of species: Mongolia, Chinese Turkestan.

EQUUS PRZEWALSKII Poliakov, 1881

1881. *Equus przewalskii* Poliakov, Proc. Imp. Russian Geogr. Soc. *17*, 1: pls. 1 and 2. See also 1881, Ann. Mag. N.H. *8:* 16. Oasis of Gashun (44°30′ N., 90° E.), steppe country of Eastern Zungaria. (Harper, 1940, J. Mammal, *21:* 196.)
1903. *Equus hagenbecki* Matschie, Naturwiss. Wochenschrift, *18*, 49: 583. Ebi Spring, Gobi Desert, Mongolia.

Lydekker considered this to be a subspecies of *Equus caballus* Linnaeus, the domestic Horse.

Equus hemionus Pallas, 1775 — Asiatic Wild Ass

Approximate distribution of species: Southern and Eastern Russian Turkestan (now surviving round Kushka, and in the south-west of the Balkash basin; single arrivals from China have recently occurred in frontier area of Ili Valley (Bobrinskii)), Mongolia, Chinese Turkestan, Tibet; Persia, Iraq, Syria; Ladak, Baluchistan, Nepal, Sind and Cutch; Afghanistan.

For a discussion of the type localities, status, etc. of these Asses, see Harper, 1940, *J. Mammal. 21:* 197; also Pocock, 1948, *P.Z.S. 117:* 764.

EQUUS HEMIONUS HEMIONUS Pallas, 1775 Chigetai, Kulan, or Mongolian Wild Ass

1775. *Equus hemionus* Pallas, Nov. Comm. Ac. Sci. Petrop. *19:* 394, pl. 7. Tarei-Nor, Dauria, Transbaikalia (50° N., 115° E.).

1891. *Equus hemionus* var. *typicus* Sclater, Cat. Mamm. Ind. Mus. *2:* 198.

(?) 1904. *Equus onager castaneus* Lydekker, Nov. Zool. *11:* 590, pl. xviii. Kirghis Nor, Kobdo, Western Mongolia.

1911. *Equus (Asinus) hemionus bedfordi* Matschie, in Futterer, Durch Asien, *3*, 5, Zoolog. Nachtrag, 23. Probably Kobdo, Mongolia.

1911. *Equus (Asinus) hemionus luteus* Matschie, *loc. cit.* 24. Western Gobi.

Range: now apparently only found about Orok Nor and Zagan Nor, in Central Mongolia.

EQUUS HEMIONUS ONAGER Boddaert, 1785 Persian Onager or Ghor-khar

1785. *Equus onager* Boddaert, Elench. Anim. 160. Kasbin, North-Western Persia, near the Caspian.

1891. *Equus onager* var. *typicus* Sclater, Cat. Mamm. Ind. Mus. *2:* 198.

(?) 1911. *Equus (Asinus) hemionus finschi* Matschie, in Futterer, Durch Asien, *3*, 5, Zool. Nachtrag, 24. North-east of Zaisan Nor, Semipalatinsk, Russian Asia.

Range: north-eastern parts of Persia and North-Western Afghanistan; Russian Turkestan, as above.

EQUUS HEMIONUS KHUR Lesson, 1827 Indian Wild Ass or Ghor-khar

1827. *Equus khur* Lesson, Mammalogie, 347. The Little Rann of Cutch, India.

(?) 1841. *Asinus hamar* H. Smith, Jardines Nat. Libr. Mamm. *31:* 351, pl. 19. Province of Fars, Persia, between Yezdi Khast and Shulgastan.

1862. *Asinus indicus* Sclater, P.Z.S. 163, *nom. nud.*

1869. *Equus indicus* George, Ann. Sci. Nat. Zool. *12:* 35.

Range: the Rann of Cutch, possibly Baluchistan, and South-Eastern Persia.

EQUUS HEMIONUS KIANG Moorcroft, 1841 Kiang

1841. *Equus kiang* Moorcroft, Travels in the Himalayan Provinces, *1:* 312. Eastern parts of Ladak, Kashmir.

1842. *Asinus equioides* Hodgson, J. Asiat. Soc. Bengal, *11*, 1: 287. Plains of Tibet.

1847. *Asinus polyodon* Hodgson, Calcutta J.N.H. *7:* 469. Hundes district of Tibet.

1869. *Asinus kyang* Kinloch, Large Game Shooting in Thibet, *1:* 13 Tibet.

1911. *Equus (Asinus) kiang holdereri* Matschie, in Futterer, Durch Asien, *3*, 5, Zool. Nachtrag, 29. South-western shore of Lake Kukunor, Chinese Central Asia.

1924. *Microhippus tafeli* Matschie, S.B. Ges. Nat. Fr. Berlin, *1922:* 68. Tosson Nor, Tibet.

Range: Ladak, Nepal, Sikkim, Tibet to Kukunor district.

EQUUS HEMIONUS HEMIPPUS I. Geoffroy, 1855

1855. *Equus hemippus* I. Geoffroy, C.R. Ac. Sci. Paris, *41:* 1214, 1220. Syria.

1869. *Equus hemionus* var. *syriacus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, *5*, Bull.: 40, pl. 4. Damascus, Syria.

Range: Syrian Desert and adjacent parts. Possibly now extinct.

ORDER ARTIODACTYLA

Responsibility for the classification of this Order is taken by T. C. S. M.-S.

Works of reference:

ALLEN, G. 1939. Checklist African Mammals, *Bull. Mus. Comp. Zool. Harvard, 83.*
—— 1940. *Mammals of China and Mongolia, 2.*
BOBRINSKII, KUZNETZOV & KUZYAKIN. 1944. *Mammals of the U.S.S.R.*
LYDEKKER. 1913–15. *Catalogue of Ungulate Mammals in the British Museum, 1–4.*
—— 1898. *The Deer of all Lands.*
MILLER. 1912. *Catalogue of Mammals of Western Europe.*
POCOCK. 1911. On the specialized cutaneous glands of Ruminants, *P.Z.S. 1910:* 840.
—— 1918. On some external characters of ruminant Artiodactyla, *Ann. Mag. N.H. 1:* 426–435; *2:* 125–144, 214–225, 367–374, 440–459.
—— 1919. On the external characters of existing Chevrotains, *P.Z.S.* 1.
—— 1923. On the external characters of *Elaphurus, Hydropotes, Pudu* and other Cervidae, *P.Z.S.* 181.
—— 1923. External characters of the Pygmy Hippopotamus, and of the Suidae and Camelidae, *P.Z.S.* 531.
SCHWARZ. 1937. *Wiss. Ergeb. Oldoway-Exp. 1913,* N.S. pt. 4; 7–90, 3 pls.
SCLATER & THOMAS. 1894–1900. *The Book of Antelopes, 1–4.*
SIMPSON. 1945. Principles of Classification and Classification of Mammals, *Bull. Amer. Mus. N.H. 85.*
WINGE. 1924. *Pattedyr-Slaegter, 3.*

Although his keys and specific diagnoses are not always very clear, Lydekker's *Catalogue of Ungulate Mammals* is one of the most useful works on this Order. Simpson (1945) classified the living Artiodactyla of the Palaearctic and Indian regions as follows:

Suborder: SUIFORMES
Infraorder: SUINA
Family: Suidae

Suborder: TYLOPODA
Family: Camelidae

Suborder: RUMINANTIA
Infraorder: TRAGULINA
Family: Tragulidae

Infraorder: PECORA
Superfamily: Cervoidea
Family: Cervidae
Superfamily: Bovoidea
Family: Bovidae

This arrangement is in general agreement with most of the earlier authors and is here followed. Subfamilies will be discussed below in the appropriate places.

FAMILIES: Bovidae, page 377
Camelidae, page 348
Cervidae, page 352
Suidae, page 344
Tragulidae, page 349

The Hippopotamidae (genus *Hippopotamus*) inhabited the Lower Nile Valley till about 1815, but are no longer found in the Palaearctic region.

SUBORDER SUIFORMES

FAMILY SUIDAE

Genus: *Sus*, page 344

Genus **SUS** Linnaeus, 1758

1758. *Sus* Linnaeus, Syst. Nat. 10th ed. *1:* 49. *Sus scrofa* Linnaeus. (Opinion 75 of the International Commission on Zoological Nomenclature.)
1847. *Porcula* Hodgson, J. Asiat. Soc. Bengal, *16:* 423. *Porcula salvania* Hodgson. Valid as a subgenus.
1862. *Centuriosus* Gray, P.Z.S. 17. *Sus plicíceps* Gray (a Japanese domestic variety).
1868. *Scrofa* Gray, P.Z.S. 38. Domestic Pig. (*Sus domesticus* Brisson = *Sus scrofa* Linnaeus.)
1869. *Euhys* Gray, Cat. Carnivora, etc. Brit. Mus. 339. *Sus barbatus* Müller, from Borneo.
1873. *Aulacochoerus* Gray, Ann. Mag. N.H. *11:* 435. *Sus vittatus* Müller = *Sus vittatus* Boie, from Sumatra.
1873. *Dasychoerus* Gray, Ann. Mag. N.H. *11:* 435. *Sus verrucosus* Müller & Schlegel, from Java.
1892. *Sinisus* Heude, Mém. H.N. Emp. Chinois, *2:* 102. Apparently based on the Chinese forms of *Sus scrofa*.

2 species in the area covered by this list:
Sus salvanius, page 348
Sus scrofa, page 345

Sus salvanius is separated subgenerically as *Porcula* on account of its small size, the very short tail, and there being only three pairs of teats as opposed to six pairs in *Sus*.

The other wild pigs of the region are here treated as belonging to a single species, *Sus scrofa*. It may be as well to draw attention to the fact that Chasen, 1940, *Handlist of Malaysian Mammals*, besides the species *S. verrucosus* and *S. barbatus* recognized one species of wild pig in the Malaysian region, which he listed as *Sus cristatus* with *vittatus* as a race. But he should have done it the other way round, since he correctly referred *vittatus* to Boie, 1828, *Bijdr. Nat. Wetensch. 3*, 1: 240, which antedates *cristatus* by eleven years. Both *cristatus* and *vittatus* are here regarded as representing *S. scrofa*.

Subgenus *SUS* Linnaeus, 1758

Sus scrofa Linnaeus, 1758 Wild Boar

Approximate distribution of species: Continental Europe, known from Spain and Portugal, France, Belgium (Holland and Denmark, became extinct but reintroduced after 1800), Germany, Switzerland, Italy, Corsica and Sardinia, Baltic States (south of 58° N.), Poland, Czechoslovakia, Austria, Hungary, Yugoslavia, Rumania, Bulgaria, Greece. In Western Russia, roughly from Riga towards Velikie Luki, but turning south before reaching there, passing round west of Vitebsk and roughly along the White Russian frontier, Chernigov district included, to Kiev, and a little south of Mogilev, reaching the Dniester, which it follows to the Black Sea (with individual cases of incursions fairly far east of this line) (Bobrinskii). Caucasus. Widely distributed in Russian Turkestan, and to as far north as Pavlodar on Irtish River. Far East of Siberia from eastern Sayan Mountains, through Transbaikalia and Amur regions to Ussuri region. Japan, Formosa, Manchuria; Mongolia, Chinese Turkestan; all the larger states of China (perhaps excepting Yunnan). Asia Minor, Persia, Afghanistan, Palestine. India, from Baluchistan, Kashmir, Nepal southwards through the Peninsula to Ceylon, east to Burma. Indo-China, Siam, Malay States, Sumatra, Java and various small islands, Flores. Rio de Oro, Morocco, Algeria, the Sudan, and formerly Egypt where it became extinct about 1900 (Flower, 1932).

Sus scrofa scrofa Linnaeus, 1758

1758. *Sus scrofa* Linnaeus, Syst. Nat. 10th ed. *1:* 49. Germany.
1785. *Sus setosus* Boddaert, Elench. Anim. *1:* 157. Substitute for *scrofa*.
1785. (*Sus setosus*) *aper* Boddaert, *loc. cit.*
1788. *Sus scrofa ferus* Gmelin, Linn. Syst. Nat. *1:* 217.
1811. *Sus europaeus* Pallas, Ross. Asiat. *1:* 265. Substitute for *scrofa*.
1836. *Sus scropha* Jardine, Nat. Libr. Mamm. *5:* 205. Substitute for *scrofa*.
1882. *Sus scrofa* var. *celtica* Strobel, Atti Soc. Ital. Sci. Nat. Milano, *25:* 79. France.

Range: from France and Germany eastwards into Western White Russia.

Sus scrofa cristatus Wagner, 1839

1839. *Sus cristatus* Wagner, Münch. Gelehrt. Anz. *9:* 435 (misprinted as "535"). Probably the Malabar coast, India.
1842. *Sus aper* var. *aipomus* Hodgson, J. Asiat. Soc. Bengal, *10:* 911. Nepal.
1842. *Sus aper* var. *isonotus* Hodgson, *loc. cit.* Nepal.
1843. *Sus indicus* Gray, List. Mamm. B.M. 185.
1847. *Sus affinis* Gray, Cat. Osteol. B.M. 71. Nilgiri Hills, India.
1851. *Sus zeylonensis* Blyth, J. Asiat. Soc. Bengal, *20:* 173. Ceylon.
1860. *Sus bengalensis* Blyth, J. Asiat. Soc. Bengal, *29:* 105. Bengal.
1900. *Sus cristatus typicus* Lydekker, Great & Small Game India, 261.

Range: Ceylon and Indian range of species above.

Sus scrofa leucomystax Temminck, 1842

1842. *Sus leucomystax* Temminck, Siebolds Fauna Japon. Mamm. 6. Japan.
1885. *Sus vittatus japonica* Nehring, Zool. Garten, *26:* 336.
Range includes Islands of Hondo, Shikoku, Kiushiu, Japan.

Sus scrofa andamanensis Blyth, 1858

1858. *Sus andamanensis* Blyth, J. Asiat. Soc. Bengal, *27:* 267. Port Blair, Andaman Islands, Bay of Bengal.

Sus scrofa barbarus Sclater, 1860

1860. *Sus scrofa* var. *barbarus* Sclater, P.Z.S. 443. North Africa.
1867. *Sus scrofa* var. *algira* Loche, Expl. Sci. de l'Algérie, Zool. Mamm. 59. Country of Beni Sliman, Algeria.
(?) 1937. *Sus scrofa sahariensis* Heim de Balsac, Bull. Soc. Zool. France, *62:* 333. Jebel Guettar, north-west of Ain Sefra, Northern Algeria.
Range: Morocco, Rio de Oro, Algeria.

Sus scrofa taivanus Swinhoe, 1863

1863. *Porcula taivana* Swinhoe, P.Z.S. *1862:* 360. Formosa.

Sus scrofa libycus Gray, 1868

1868. *Sus libycus* Gray, P.Z.S. 31. Xanthus, near Günek, South-Western Asia Minor.

Sus scrofa moupinensis Milne-Edwards, 1872

1872. *Sus moupinensis* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 93 (footnote). Moupin, Szechuan, China.
1888. *Sus oxyodontus* Heude, Mém. H.N. Emp. Chin. *2:* 54, *nom. nud.* Upper Han River, Shensi, China.
1888. *Sus dicrurus* Heude, *loc. cit.* 55. Divide between Han and Kincha Rivers, Shensi, China.
1892. *Sus curtidens*, *Sus laticeps*, *Sus collinus* and *Sus acrocranius* Heude, Mém. H.N. Emp. Chin. *2:* 114.
1899. *Sus planiceps* Heude, Mém. H.N. Emp. Chin. *4:* 132. Ho Shan, Anhwei, China.
Range: Szechuan, eastwards to Chihli, Northern China.

Sus scrofa nigripes Blanford, 1875

1875. *Sus scrofa* var. *nigripes* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 112. Kashgar district, Chinese Tianshan. Ranges throughout Russian Turkestan, and probably Afghanistan.

Sus scrofa meridionalis Forsyth Major, 1882

1882. *Sus scrofa meridionalis* Forsyth Major, Atti Soc. Tosc. Sci. Nat. Pisa, Proc. Verb. *3:* 119 (May). Sardinia.
1882. *Sus scrofa* var. *sardous* Strobel, Atti Soc. Ital. Sci. Nat. Milano, *25:* 221 (September). Sardinia.

Sus scrofa ussuricus Heude, 1888

1888. *Sus ussuricus* Heude, Mém. H.N. Emp. Chin. *2:* 54. Ussuri Valley, Eastern Siberia

1889. *Sus leucomystax* var. *continentalis* Nehring, S.B. Ges. Nat. Freunde Berlin, 141. Vladivostock, Eastern Siberia.

1892. *Sus gigas* Heude, Mém. H.N. Emp. Chin, *2:* 114. Vladivostock, Eastern Siberia.

1897. *Sus songaricus* Heude, Mém. H.N. Emp. Chin. *3:* 191. Valley of Sungari River, Manchuria.

(?) 1897. *Sus canescens* Heude, *loc. cit.* 192. Pekin, China.

1897. *Sus mandchuricus* Heude, *loc. cit.* 192. Mukden, Manchuria.

Sus scrofa chirodontus Heude, 1888

1888. *Sus chirodontus* Heude, Mém. H.N. Emp. Chin. *2:* 54. Poyang Lake, Kiangsi, Southern China.

1888. *Sus palustris* Heude, *loc. cit.* (footnote). Not of Rütimeyer, 1861. Valley of Yangtze, China.

1892. *Sus leucorhinus*, *Sus paludosus*, *Sus melas* Heude, Mém. H.N. Emp. Chin. *2:* 114.

1899. *Sus flavescens* Heude, Mém. H.N. Emp. Chin. *4:* 130. Yangtze and Taihu, Kiangsu, China.

1899. *Sus chirodonticus* Heude, *loc. cit.* Poyang Lake, Kiangsi, China.

Range: Southern China and Hainan.

Sus scrofa coreanus Heude, 1897

1897. *Sus coreanus* Heude, Mém. H.N. Emp. Chin. *3:* 191. Fusan, Korea.

Sus scrofa nicobaricus Miller, 1902

1902. *Sus nicobaricus* Miller, Proc U.S. Nat. Mus. *24:* 755. Great Nicobar Island, Bay of Bengal.

Sus scrofa jubatus Miller, 1906

1906. *Sus jubatus* Miller, Proc. U.S. Nat. Mus. *30:* 745. Trang, Lower Siam. Ranges north into Indo-China.

Sus scrofa attila Thomas, 1912

1912. *Sus attila* Thomas, Abstr. P.Z.S. 13; P.Z.S. 393. Kolozsvar, Transylvania. Ranges eastwards to the Caucasus and Northern Persia.

Sus scrofa castilianus Thomas, 1912

1912. *Sus scrofa castilianus* Thomas, Abstr. P.Z.S. 13; P.Z.S. 392. Quintanar de la Sierra, near Burgos, Northern Spain.

(?) 1912. *Sus scrofa baeticus* Thomas, Abstr. P.Z.S. 14; P.Z.S. 393. Coto Doñana, Huelva, Southern Spain.

Sus scrofa falzfeini Matschie, 1918

1918. *Sus falzfeini* Matschie, S.B. Ges. Naturf. Fr. Berlin, No. 8, 5. Naliboki, North-Eastern Poland.

Sus scrofa riukiuanus Kuroda, 1924

1924. *Sus leucomystax riukiuanus* Kuroda, on New Mammals from Riu Kiu Islands (Tokyo), 11. Kabira, Ishigakijima, Riukiu Islands.

Sus scrofa reiseri Bolkay, 1925

1925. *Sus attila reiseri* Bolkay, Nov. Mus. Sarajevo, *1:* 13. Bosnia, Yugoslavia.

Sus scrofa majori de Beaux & Festa, 1927

1927. *Sus scrofa majori* de Beaux & Festa, Mem. Soc. Ital. Sci. Nat. Milano, *9:* 270. Mt. Pescali, Tuscany Maremma, Italy.

Sus scrofa raddeanus Adlerberg, 1930

1930. *Sus scrofa raddeanus* Adlerberg, C.R. Acad. Sci. U.R.S.S. 95, figs. 2, 3. Sugu Nor, southern Kentai Mountains, Mongolia. Ranges to Southern Transbaikalia.

Subgenus *PORCULA* Hodgson, 1847

Sus salvanius Hodgson, 1847 Pygmy Hog

Approximate distribution: the Terai of Sikkim, Nepal and Bhutan, India.

Sus salvanius Hodgson, 1847

1847. *Porcula salvania* Hodgson, J. Asiat. Soc. Bengal, *16:* 423, pls. 12, 13. Sikkim Terai, India.

1863. *Sus lilliputensis* Gray, Cat. Hodgson's Coll. B.M., 2nd ed. 15, *nom. nud.*

Tate (1947, 311) suggests that *salvanius* may have been based on young specimens of the Indian wild boar. This was not so, and the species is valid. The adult skulls in the British Museum have an overall length of only 150–160 mm.

suborder Tylopoda

FAMILY CAMELIDAE

Genus: *Camelus*, page 348

Genus **CAMELUS** Linnaeus, 1758

1758. *Camelus* Linnaeus, Syst. Nat. 10th ed. *1:* 65. *Camelus bactrianus* Linnaeus (see Opinion 16 of International Commission on Zoological Nomenclature).

1 species known in the wild state:

Camelus bactrianus, page 349

Camelus bactrianus Linnaeus, 1758 Bactrian, or Two-humped Camel

Approximate distribution of species: According to Allen (1940) it is not possible to say whether the camels found in Central Asia are truly wild or are descended from escaped domesticated stock. Harper (1945) says that the wild Bactrian camel still exists in restricted numbers in Chinese Turkestan and in Mongolia. The same author quotes Leche (1904) and Lattimore (1929) on the anatomical differences between *Camelus bactrianus bactrianus* and *C. b. ferus* which support the view that the latter is a genuinely wild animal, not contaminated to any appreciable extent with the blood of the domestic animal. According to Bannikov, 1945, *Zool. J. Moscow, 24:* 200, there are wild Bactrian camels in the Gobi in an area bounded by the parallels of 42–45° and by longitudes 96–99°. The only camels in the U.S.S.R. are domestic ones (Bobrinskii, 1944). The domestic Bactrian camel has a wide distribution in Asia. The Dromedary, or One-humped Camel (*Camelus dromedarius* Linnaeus), is not known in the wild state.

CAMELUS BACTRIANUS BACTRIANUS Linnaeus, 1758 (Domestic Bactrian Camel)

1758. *Camelus bactrianus* Linnaeus, Syst. Nat. 10th ed. *1:* 65. "Bactria" = Bokhara.

CAMELUS BACTRIANUS FERUS Przewalski, 1883 (Wild Bactrian Camel)

1883. *Camelus bactrianus ferus* Przewalski, Third Journey into Central Asia, 43. Border of the Kum-tagh, east of Lob-Nor and north of the Altyn-tagh, Chinese Turkestan (Harper, 1940).

SUBORDER RUMINANTIA

FAMILY TRAGULIDAE

Genus: *Tragulus*, page 349

Genus **TRAGULUS** Brisson, 1762

1762. *Tragulus* Brisson, Regn. Anim. 65. *Tragulus indicus* Brisson ? = *Cervus javanicus* Osbeck.

1843. *Moschiola* Hodgson, Calcutta J.N.H. *4:* 292. *Tragulus mimenoides* Hodgson = *Tragulus meminna* Erxleben. Valid as a subgenus. (Thomas, 1916, Ann. Mag. N.H. *18:* 72, says that *Moschiola* Hodgson is invalid because it was published in conjunction with a *nomen nudum* (i.e. *mimenoides*). But Thomas was mistaken in thinking this was a *nomen nudum*. The name *mimenoides* was published in proper form by Hodgson in the previous year (see below).)

Hopwood, 1947, *P.Z.S. 117:* 534, considers Brisson, 1762, an unavailable work and holds, further, that the name *Tragulus* Pallas, 1779, *Spicilegia Zoologica, 13:* 27, is also unavailable. He proposes dating *Tragulus* from Boddaert, 1785, *Elenchus Animalium*, with type species *T. pygmaeus* Boddaert = *Capra pygmaeus* (sic) Linnaeus, 1758. This selection of type species is, however, most unfortunate, since *Capra pygmaeus* Linnaeus, 1758, is the Royal Antelope of West Africa, a member of the Bovidae.

An examination of Boddaert shows, however, that Boddaert should not, by his own definition, have included *pygmaeus* in his *Tragulus*, since the latter is defined as being hornless whereas *Moschus pygmaeus* Linnaeus, 1766, which is what Boddaert definitely quotes, and which is the same thing as *Capra pygmaea* Linnaeus, 1758, has horns.

The only hornless species included by Boddaert in *Tragulus* are *T. moschus* (= *Moschus moschiferus* Linnaeus, 1758) and *T. meminna* Erxleben, 1777, and in his index on p. 49, he writes: "*Tragulus* (*Moschus* Linn.)". The type species of *Tragulus* Boddaert, 1785, is therefore *Moschus moschiferus* Linnaeus, 1758, the Musk Deer. So irrespective of Hopwood's curious selection of type species the dating of *Tragulus* from Boddaert, 1785, would be a most unfortunate affair, involving, as it would, the transferring of *Tragulus* away from the Tragulines, with all the resulting confusion.

Therefore, pending a decision by the International Commission on Zoological Nomenclature, we propose to continue dating *Tragulus* from Brisson, 1762.

The classification of this genus presents no great difficulties, thanks to the work of Lydekker, Chasen and others. Two species of the typical subgenus occur side by side more or less from Tenasserim to Borneo. *T. meminna*, from Western India, is separated subgenerically as *Moschiola*. Pocock gave it generic rank, but we prefer to follow Simpson and regard it as a subgenus. See Pocock, 1919, *P.Z.S.* 1; and Lydekker, 1915, *Cat. Ung. Mamm. B.M. 4:* 260, for specific characters.

3 species: *Tragulus javanicus*, page 351
Tragulus meminna, page 350
Tragulus napu, page 351

Subgenus *MOSCHIOLA* Hodgson, 1843

Tragulus meminna Erxleben, 1777 Indian Spotted Chevrotain (Mouse-deer)

Approximate distribution of species: Ceylon and Peninsular India. (See Champion, 1929, J. Bombay N.H. Soc. *33:* 985, for Indian details); in India, north approximately to Central Provinces.

TRAGULUS MEMINNA Erxleben, 1777

1777. *Moschus meminna* Erxleben, Syst. Regn. Anim., Mamm. 322. Ceylon.
(?) 1842. *Tragulus mimenoides* Hodgson, J. Asiat. Soc. Bengal, *10:* 914. Nepal Terai.
1843. *Meminna indica* Gray, List. Mamm. B.M. 172. Not of Brisson, 1762, but based on *meminna* Erxleben.
1843. *Meminna malaccensis* Gray, List. Mamm. B.M. 172. Locality unknown. (Gray gives "Singapore.")

Subgenus *TRAGULUS* Brisson, 1762

See Kloss, 1918, *J. Fed. Malay States Mus. 7:* 245; Notes on Malayan and other Mouse-deer.

A. van Bemmel, 1949, *Treubia, 20,* 2: 378, points out the necessity for "a rather disagreeable change of nomenclature" in this subgenus. For years the Larger Mouse-deer has been called *Tragulus javanicus* Osbeck, and the Lesser Mouse-deer *T. kanchil* Raffles. It was not till 1929 that Sody and Dammerman began to query the existence of the Larger Mouse-deer in Java.

Now van Bemmel has investigated the problem thoroughly and finds that in no collection can a specimen of the Larger Mouse-deer be found which is reliably known to have come from Java, and, further, that the Larger Mouse-deer has never been observed in Java. Furthermore, a study of the description of *javanicus* together with Osbeck's earlier, pre-Linnean description, and his narrative, makes it clear that the animals which Osbeck bought alive from natives on the coast of Udjon Kulon Peninsula, Western Java, were Lesser Mouse-deer, which is in fact the only form of Mouse-deer which does occur in Java.

A switch round of names is therefore necessary and the Lesser Mouse-deer must be called *Tragulus javanicus* Osbeck, 1765 (= *Moschus kanchil* Raffles, 1821), and for the Larger Mouse-deer there is *Tragulus napu* F. Cuvier, 1822 (= *Tragulus javanicus auct. nec* Osbeck).

Presumably the form from Java listed by Chasen (1940, 201) as *T. kanchil focalinus* is a synonym of *T. j. javanicus*, and presumably *kanchil* Raffles will stand as the Sumatran race of *javanicus*.

Tragulus napu F. Cuvier, 1822 Larger Malay Chevrotain (Mouse-deer)

Approximate distribution of species: Tenasserim, Siam, Indo-China, Malay States, Sumatra, Borneo, many small adjacent islands, including Balabac.

Tragulus napu napu F. Cuvier, 1822

1822. *Moschus napu* F. Cuvier, in Geoffroy & Cuvier, H.N. Mamm. *2,* 37: 2. Southern Sumatra (Sody, 1931).

1900. *Tragulus canescens* Miller, Proc. Biol. Soc. Washington, *13:* 185. Trang, Lower Siam.

Ranges to Tenasserim.

Tragulus napu versicolor Thomas, 1910

1910. *Tragulus versicolor* Thomas, Ann. Mag. N.H. *5:* 535. Nhatrang, Annam, Indo-China.

Tragulus javanicus Osbeck, 1765 Lesser Malay Chevrotain (Mouse-deer)

Approximate distribution of species: Tenasserim, Indo-China, Siam, Malay States, Sumatra, Java, Borneo, and many small adjacent islands.

(Tragulus javanicus javanicus Osbeck, 1765. Extralimital)

(?) 1762. *Tragulus indicus* Brisson, Regn. Anim. 65. (Unavailable, see page 3.)

1765. *Cervus javanicus* Osbeck, Reise nach Ostindien und China, 357. Udjon Kulon Peninsula, Western Java (van Bemmel, 1949).

TRAGULUS JAVANICUS AFFINIS Gray, 1861

1861. *Tragulus affinis* Gray, P.Z.S. 138. Cambodia, Indo-China. (See Osgood, 1932, Field Mus. N.H. Zool. *18:* 329.)

(?) 1902. *Tragulus ravus* Miller, Proc. Biol. Soc. Washington, *15:* 173. Trang, Lower Siam. Ranges to Tenasserim.

1903. *Tragulus kanchil pierrei* Bonhote, Ann. Mag. N.H. *11:* 293. Bien Hoa, Lower Cochin-China.

TRAGULUS JAVANICUS LAMPENSIS Miller, 1903

1903. *Tragulus lampensis* Miller, Proc. Biol. Soc. Washington, *16:* 42. Pulau Lampi (= Sullivans Island), Mergui Archipelago.

TRAGULUS JAVANICUS WILLIAMSONI Kloss, 1916

1916. *Tragulus kanchil williamsoni* Kloss, J.N.H. Soc. Siam, *2:* 88. Me Song Forest, Pre, Northern Siam.

TRAGULUS JAVANICUS ANGUSTIAE Kloss, 1918

1918. *Tragulus kanchil angustiae* Kloss, J. Fed. Malay States Mus. *7:* 254. Bankachon, Victoria Point, Tenasserim. Ranges to extreme north of Lower Siam.

TRAGULUS JAVANICUS MERGATUS Thomas, 1923

1923. *Tragulus ravus mergatus* Thomas, J. Bombay N.H. Soc. *29:* 85. King's Island, Mergui Archipelago.

FAMILY CERVIDAE

Genera: *Alces*, page 373
Axis, page 360
Capreolus, page 371
Cervus, page 361
Dama, page 358
Elaphodus, page 357
Elaphurus, page 370
Hydropotes, page 354
Moschus, page 353
Muntiacus, page 355
Rangifer, page 375

Amongst living Cervidae *Moschus* and *Hydropotes* stand apart from the remainder on account of their lack of antlers. Simpson (1945) divided the living Cervidae into four subfamilies: the Moschinae, for *Moschus* alone; the *Muntiacinae*, for *Muntiacus* and *Elaphodus*; the Cervinae, for *Cervus*, *Axis*, *Dama* and *Elaphurus*; and the Odocoileinae in which he recognizes several "tribes" in the Palaearctic, each containing a single living genus: *Capreolus*, *Alces*, *Rangifer* and *Hydropotes*. Most of this classification is foreshadowed in Lydekker, and other earlier works. It is here followed, with the exception that we prefer to follow G. Allen and many others in giving *Hydropotes* subfamily rank. There is a wide evolutionary difference between primitive deer of this description and deer in which antlers are present.

In the generic division of the deer we follow Simpson, thereby, perhaps, appearing rather conservative to those workers who recognize some five other genera which seem best regarded as subgeneric groups. (See also Pocock, 1923, Classification of the Cervidae, *P.Z.S.*, London, 206.)

Subfamily Moschinae

Genus **MOSCHUS** Linnaeus, 1758

1758. *Moschus* Linnaeus, Syst. Nat. 10th ed. *1:* 66. *Moschus moschiferus* Linnaeus. (Opinion 75, International Commission on Zoological Nomenclature.)
1848. *Odontodorcus* Gistel, Naturgesch. Thierreichs, 82. *Moschus moschiferus* Linnaeus.

1 species: *Moschus moschiferus*, page 353

Moschus moschiferus Linnaeus, 1758 — Musk Deer (Kastura)

Approximate distribution of species: in the U.S.S.R., the Altai, the whole of the mountain-taiga part of Siberia from the Yenesei up to and including the eastern slope of the Kolyma Range (but not occurring in North-Eastern Siberia nor Kamtchatka), the Sea of Okhotsk and Sakhalin, Ussuri region. Mongolia, Manchuria, Korea, Tibet; in China, Szechuan, Shensi and Shansi, Kansu and possibly (? or formerly) Chihli; Kashmir eastwards to Nepal and Sikkim (Assam and Northern Burma, Tate (1947).) (Earlier authors, e.g. Trouessart, quoted the species from Indo-China, but this appears doubtful; possibly the result of confusion with a Traguloid ?)

Moschus moschiferus moschiferus Linnaeus, 1758

1758. *Moschus moschiferus* Linnaeus, Syst. Nat. 10th ed. *1:* 66. "Tartary, approaching China."
1830. *Moschus altaicus* Eschscholtz, Isis (Oken), 606. Mongolia.
1839. *Moschus chrysogaster* Hodgson, J. Asiat. Soc. Bengal, *8:* 203. Nepal.
1839. *Moschus leucogaster* Hodgson, *loc. cit.* Nepal.
1839. *Moschus saturatus* Hodgson, *loc. cit.* Nepal.
1872. *Moschus moschiferus maculatus* Gray, Cat. Rum. Mamm. B.M. 96.
1872. *Moschus moschiferus fasciatus* Gray, *loc. cit.*
1872. *Moschus moschiferus concolor* Gray, *loc. cit.* These names were based on vernacular names of Milne-Edwards, 1864, Ann. Sci. Nat. Zool. *2:* 62.
1915. *Moschus cacharensis* Lydekker (ex Hodgson MS.), Cat. Ung. Mamm. B.M. *4:* 6. Kachar (*nom. nud.*).

Range: Altai and Sayan Mountains, Siberia and Mongolia. According to Lydekker, the Indian Himalayan form is the same and he did not retain the next, which Bobrinskii says is of doubtful validity:

Moschus moschiferus sibiricus Pallas, 1779

1779. *Moschus sibiricus* Pallas, Spic. Zool. *13:* 29. Stanovoi Range, Transbaikalia.

Moschus moschiferus sifanicus Büchner, 1891

1891. *Moschus sifanicus* Büchner, Mélanges Biol. St. Petersb. *13:* 162. Southern Kansu, China.
1929. *Moschus berezovskii* Flerov, C.R. Acad. Sci. U.R.S.S. *1928A:* 519. Ho-tsi-how Pass, near Lungan, Szechuan, China. (Status *fide* G. Allen.)

Range: Kansu, Shensi, Szechuan, in China.

Moschus moschiferus parvipes Hollister, 1911

1911. *Moschus parvipes* Hollister, Proc. Biol. Soc. Washington, *24:* 1. Mountains near Mok-po, South Tscholla Province, Korea. Ranges to Manchuria, and the Amur-Ussuri region of Eastern Siberia.

Moschus moschiferus arcticus Flerov, 1929

1929. *Moschus moschiferus arcticus* Flerov, C.R. Acad. Sci. U.R.S.S. *1928A:* 516. Mt. Toulaiakh-khaia, North-Eastern Taskhaiakhtakh Range, Verhoiansk district, North-Eastern Siberia.

Moschus moschiferus sachalinensis Flerov, 1929

1929. *Moschus moschiferus sachalinensis* Flerov, C.R. Acad. Sci. U.R.S.S. *1928A:* 517. Sakhalin Island, Eastern Siberia.

Moschus moschiferus turowi Zalkin, 1945

1945. *Moschus moschiferus turowi* Zalkin, C.R. Acad. Sci. U.R.S.S. *46:* 331-332. Sikhote-Alin National Park, Terney Bay, Amurland.

Subfamily Hydropotinae

Genus **HYDROPOTES** Swinhoe, 1870

1870. *Hydropotes* Swinhoe, P.Z.S. 90. *Hydropotes inermis* Swinhoe.
1898. *Hydrelaphus* Lydekker, Deer of all Lands, 219. Substitute for *Hydropotes*, thought to be preoccupied by *Hydropota* Rondani, 1861.

1 species: *Hydropotes inermis*, page 354

Hydropotes inermis Swinhoe, 1870 Chinese Water-Deer

Approximate distribution of species: China, the eastern Yangtze Basin, westwards to Hupeh. Korea.

Hydropotes inermis inermis Swinhoe, 1870

1870. *Hydropotes inermis* Swinhoe, P.Z.S. 89. Deer Island, in the Yangtze River, a few miles upstream from Chinkiang, Kiangsu, China.
1872. *Hydropotes affinis* Brooke, P.Z.S. 524. Yangtze River, about 40 miles from Shanghai, China.
1905. *Hydropotes kreyenbergi* Hilzheimer, Zool. Anz. *29:* 298. Chinkiang, Kiangsu, China.

Range: Eastern Yangtze Basin, China.

Hydropotes inermis argyropus Heude, 1884

1884. *Hydropotes argyropus* Heude, C.R. Acad. Sci. Paris, *98:* 1017. Hilzheimer, 1906, Abh. Mus. Nat. u. Heimatk., Magdeburg, *1:* 171. Korea. (Trouessart, 1898, Cat. Mamm. *2:* 865, states, erroneously, that Heude's name was a *nomen nudum*.)

Subfamily Muntiacinae

Genus **MUNTIACUS** Rafinesque, 1815

1815. *Muntiacus* Rafinesque, Analyse de la Nature, 56. *Cervus muntjak* Zimmermann (see page 4).
1816. *Cervulus* Blainville, Bull. Soc. Philom. Paris, 74. *Cervus muntjak* Zimmermann.
1825. *Muntjaccus* Gray, Ann. Phil. *10:* 342 (*nom. nud.*).
1827. *Stylocerus* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 319. *Cervus muntjak* Zimmermann.
1837. *Prox* Ogilby, P.Z.S. *1836:* 135. *Prox moschatus* Ogilby = *Cervus muntjak* Zimmermann.
1843. *Muntjacus* Gray, List. Spec. Mamm. B.M. 173. *Cervus muntjak* Zimmermann.
1923. *Procops* Pocock, P.Z.S. 207. *Cervulus feae* Thomas & Doria.

5 species: *Muntiacus crinifrons*, page 357
Muntiacus feae, page 357
Muntiacus muntjak, page 355
Muntiacus reevesi, page 356
Muntiacus rooseveltorum, page 356

Pocock separated *M. feae* generically on account of the absence of frontal glands. Lydekker stated that these were also absent in *M. crinifrons*, but G. Allen, 1940, *Mammals of China and Mongolia*, *2:* 1160, says that they are present in this species, and Thomas and Doria say that *feae* is closely related to *crinifrons*. Neither is well known. Osgood (1932) reviewed the genus and recognized the long-standing species listed here, and gave certain colour details and cranial characters to separate *M. reevesi* from *M. muntjak*. He also described a new species, *M. rooseveltorum*, based on a single specimen, which from description appears valid; it seems curiously intermediate between *muntjak* and *reevesi*, being intermediate in size, having the colour more as *reevesi* and the relatively small preorbital pit of *muntjak*. But the possibility that *rooseveltorum* is a hybrid between *muntjak* and *reevesi* is perhaps unlikely, as *reevesi* is unknown from Indo-China, though many mammals from the habitat of *reevesi*, Southern China, do extend into Indo-China. Besides this, *rooseveltorum* is described as having highly-developed glandular brushes on either side of the chin, which Osgood says are usually present in the other species, though much less well developed.

Muntiacus muntjak Zimmermann, 1780 Indian Muntjac (Barking Deer)

Approximate distribution of species: Yunnan and Hainan, in Southern China; Burma, Assam, Nepal, Peninsular India, Ceylon. Indo-China, Siam, Malay States, Sumatra, Java, Borneo, and some adjacent small islands.

(Muntiacus muntjak muntjak Zimmermann, 1780. Extralimital)
1780. *Cervus muntjak* Zimmermann, Geogr. Gesch. *2:* 131. Java.

MUNTIACUS MUNTJAK VAGINALIS Boddaert, 1785

1785. *Cervus vaginalis* Boddaert, Elench. Anim. *1:* 136. Bengal.
1833. *Cervus ratwa* Hodgson, Asiatick Res. *18,* 2: 139. Nepal.
1840. *Cervus melas* Ogilby, in Royle, Illustr. Bot. Himalaya, lxxiii. India; a melanistic form.
1845. *Cervus styloceros* Schinz, Synop. Mamm. *2:* 549. Renaming of *melas.*
1852. *Stylocerus muntjacus* Kelaart, Prod. Faun. Zeylan, 85. Renaming of *vaginalis.*

Range: Kumaon to Bhutan Duars and Chindwin, Burma; Yunnan, Northern Indo-China.

MUNTIACUS MUNTJAK AUREUS H. Smith, 1826

1826. *Cervus aureus* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* pl. opposite p. 148 (text, 148, 1827). "Some part of Southern India" (Lydekker, 1915).
1844. *Cervus albipes* Wagner, Schreb. Säugeth. Suppl. *4:* 394. Bombay and Poona.
1872. *Cervulus tamulicus* Gray, Cat. Ruminants B.M. 94. Deccan, India.

Range: southern part of Peninsular India.

MUNTIACUS MUNTJAK CURVOSTYLIS Gray, 1872

1872. *Cervulus curvostylis* Gray, Cat. Ruminants B.M. 94. Pachebon, Siam.

MUNTIACUS MUNTJAK GRANDICORNIS Lydekker, 1904

1904. *Cervulus muntjac grandicornis* Lydekker, Field, *104:* 780. Thouagyen Forest, Amherst district, Burma. Range: Burma and Tenasserim.

MUNTIACUS MUNTJAK MALABARICUS Lydekker, 1915

1915. *Muntiacus muntjak malabaricus* Lydekker, Cat. Ungulate Mamm. B.M. *4:* 24. Nagarhol, Coorg, Southern India. Range: Malabar coast and Ceylon.

MUNTIACUS MUNTJAK ANNAMENSIS Kloss, 1928

1928. *Muntiacus muntjak annamensis* Kloss, Ann. Mag. N.H. *1:* 399. Langbian Peak, Southern Annam, Indo-China.

MUNTIACUS MUNTJAK NIGRIPES G. Allen, 1930

1930. *Muntiacus muntjak nigripes* G. Allen, Amer. Mus. Nov. 430, 11. Nodoa, Island of Hainan. Range includes Annam (part).

Muntiacus rooseveltorum Osgood, 1932

Distribution: only known from the type locality, in Indo-China.

MUNTIACUS ROOSEVELTORUM Osgood, 1932

1932. *Muntiacus rooseveltorum* Osgood, Field Mus. Publ. Zool. *18:* 332. Muong Yo, Laos, Indo-China.

Muntiacus reevesi Ogilby, 1839 Reeves' Muntjac

Approximate distribution of species: Szechuan, Hupeh, eastwards to Fukien and adjacent states in Southern China; ? Formosa.

Muntiacus reevesi reevesi Ogilby, 1839
1839. *Cervus reevesi* Ogilby, P.Z.S. *1838:* 105. Near Canton, Kwantung, Southern China.
1872. *Cervulus lachrymans* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 93. Moupin, Szechuan, China.
1873. *Cervulus sclateri* Swinhoe, P.Z.S. 814. Near Ningpo, Chekiang, Southern China.
1905. *Cervulus sinensis* Hilzheimer, Zool. Anz. *29:* 297. Probably Hwei Shan, Anhwei, Southern China.
1906. *Cervulus reevesi pingshiangicus* Hilzheimer, Abh. Mus. Nat. u. Heimatk. Magdeburg, *1:* 169. Pingshiang, Anhwei, China.
1910. *Cervulus bridgemani* Lydekker, Abstr. P.Z.S. 38; 1911, P.Z.S. *1910:* 989. Hwei Shan, Anhwei, China.
1915. *Muntiacus lachrymans teesdalei* Lydekker, Cat. Ungulate Mamm. B.M. *4:* 27. Tatung, Yangtze Valley, China.
Range: as in the species, except Formosa.

Muntiacus reevesi micrurus Sclater, 1875
1875. *Cervulus micrurus* Sclater, P.Z.S. 421, pl. 51. ? Formosa. Perhaps a synonym of the typical race.

We follow G. Allen in referring all named forms to the synonymy of the typical race, except the last. Lydekker divided this group into three distinct species, and several races.

Muntiacus crinifrons Sclater, 1885 Black Muntjac

Approximate distribution of species: known from three specimens only, from the State of Chekiang, in South-Eastern China.

Muntiacus crinifrons Sclater, 1885
1885. *Cervulus crinifrons* Sclater, P.Z.S. 1, pl. 1. Near Ningpo, Chekiang, South-Eastern China.

Muntiacus feae Thomas & Doria, 1889 Fea's Muntjac

Approximate distribution of species: known only by very few specimens from Tenasserim and Siam.

Muntiacus feae Thomas & Doria, 1889
1889. *Cervulus feae* Thomas & Doria, Ann. Mus. Stor. Nat. Genova, *7:* 92. Thagata Juva, south-east of Mt. Mulaiyit, Tenasserim.

Genus **ELAPHODUS** Milne-Edwards, 1872

1872. *Elaphodus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 93. *Elaphodus cephalophus* Milne-Edwards.
1874. *Lophotragus* Swinhoe, P.Z.S. 453. *Lophotragus michianus* Swinhoe.

1 species: *Elaphodus cephalophus*, page 358

This genus is closely allied to *Muntiacus*; its characters are given in Lydekker, 1915, *Cat. Ungulate Mamm. B.M. 4:* 34.

Elaphodus cephalophus Milne-Edwards, 1872 Tufted Deer

Approximate distribution of species: Szechuan, Hupeh, Yunnan, Fukien and Chekiang in Southern China; Northern Burma.

Elaphodus cephalophus cephalophus Milne-Edwards, 1872

1872. *Elaphodus cephalophus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 93. Moupin, Szechuan, China. Range: to Yunnan and Northern Burma.

Elaphodus cephalophus michianus Swinhoe, 1874

1874. *Lophotragus michianus* Swinhoe, P.Z.S. 453, pl. 59. Near Ningpo, Chekiang, Southern China.

1904. *Elaphodus michianus fociensis* Lydekker, P.Z.S. *1904*, 2: 169. Fing-ling, Fokien, Southern China.

Range: South-Eastern China.

Elaphodus cephalophus ichangensis Lydekker, 1904

1904. *Elaphodus ichangensis* Lydekker, P.Z.S. *1904*, 2: 169. Ichang, Hupeh, China. Ranges into Szechuan.

Subfamily Cervinae

Lydekker (1915) gives a key to the genera. He regarded *Axis* as a subgenus of *Cervus*, to which he gives a key of subgenera on p. 48. Pocock and others, including Simpson, have raised *Axis* to generic rank.

Genus **DAMA** Frisch, 1775

1775. *Dama* Frisch, Natur-syst. der Vierfüss. Thiere, 3. *Cervus dama* Linnaeus. (See page 3.)

1780. *Platyceros* Zimmermann, Geogr. Geschichte, *2:* 128. *Platyceros plinii* Zimmermann = *Cervus dama* Linnaeus.

1827 *Dama* H. Smith, Griffith's Cuvier Anim. Kingd. Mamm. *5:* 306. *Cervus dama* Linnaeus.

1844. *Platyceros* Wagner, Schreb. Säugeth. Suppl. *4:* 340. *Cervus dama* Linnaeus.

1855. *Dactyloceros* Wagner, *loc. cit. 5:* 349, 352. Substitute for *Dama* and *Platyceros*.

1893. *Machlis* Zittel, Handb. Paleont. *4:* 402. (Synonym of *Dama* in part, *teste* Kaup.)

1898. *Palmatus* Lydekker, Deer of all Lands, 125. Substitute for *Dama*. (For use of the name *Dama*, see J. Mammal. *30*, 1949: 94.)

2 species: *Dama dama*, page 359
Dama mesopotamica, page 359

Dama mesopotamica is provisionally accorded specific rank on account of its greater size, the peculiarity of the antlers, and, more especially, on account of the shape of the nasals which are much broader across the proximal end than in *dama* (Brooke, 1876, gives this measurement as 74 mm. in *mesopotamica* against 46 mm. in *dama*). At

the same time it should be borne in mind that *mesopotamica* has been found in large numbers in the Pleistocene of Palestine, where its antler shape shows great variation. The recent range of *dama* extended to Palestine, and it may well have been that within recent times the range of *mesopotamica* abutted on that of *dama* and that the former should be regarded as a geographical race of the latter.

Dama dama Linnaeus, 1758 Fallow Deer

Approximate distribution of species: the original home is said to be the Mediterranean region of Southern Europe and Asia Minor, but fallow deer have been widely introduced and are now to be found wild in most parts of Western Europe, the Western Ukraine and Baltic States. Introductions were made in North Africa, but it is doubtful whether there are any there established wild. The present status in Asia Minor is obscure.

Dama dama Linnaeus, 1758

1758. *Cervus dama* Linnaeus, Syst. Nat. 10th ed. *1:* 67. Sweden (introduced).
1780. *Platyceros plinii* Zimmermann, Geogr. Gesch. *2:* 128. Renaming of *dama*.
1798. *Cervus platyceros* Cuvier, Tabl. Élém. H.N. Anim. 160. Renaming of *dama*.
1816. *Cervus mauricus* Cuvier, Bull. Soc. Philom. Paris, 72. No locality. (Melanistic.)
1829. *Cervus dama* var. *vulgaris* Fischer, Syn. Mamm. 448.
1829. *Cervus dama* var. *leucaethiops* Fischer, *loc. cit.* (albino).
1829. *Cervus dama* var. *maura* Fischer, *loc. cit.* Renaming of *mauricus*.
1874. *Dama platyceros niger* Fitzinger, S.B. Akad. Wiss. Wien, *69*, 1: 553.
1874. *Dama platyceros varius* Fitzinger, *loc. cit.* 555.
1874. *Dama platyceros albus* Fitzinger, *loc. cit.* 555. (These names based on melanistic, spotted and albino variations.)

Occurs in Spain, France, United Kingdom, Holland, Belgium, Denmark, Switzerland, Italy, Austria, Germany, Poland, Czechoslovakia, Hungary, the Baltic States, Norway, Sweden, the Ukraine, and Island of Rhodes. Probably throughout the Balkans as well.

Dama mesopotamica Brooke, 1875 Persian Fallow Deer

Approximate distribution of species: Persia, and adjacent parts of Iraq. This deer may now be extinct. A male was obtained on 21 July 1917, at Zakho, 37°08′ N., 42°37′ E. (Northern Iraq), and another specimen has been recorded from the Juanrud district, north of Kermanshah, Western Persia. The last recorded specimen from the Luristan district appears to have been one seen in the upper reaches of the River Diz, about 1906. (See also Brooke, *P.Z.S.*, London, *1876:* 298, and *1878:* 790, Bate, 1937, *The Stone Age of Mount Carmel*, *1*, 2: 210, and Pocock, 1946, *J. Soc. Pres. Fauna Emp. 53:* 53.)

Dama mesopotamica Brooke, 1875

1875. *Cervus* (*Dama*) *mesopotamicus* Brooke, P.Z.S. 264. Luristan Province of Persia.
1905. *Cervus dama mesopotamiae* Trouessart, Caus. Sci. Soc. Zool. France, *1:* 405.

Genus **AXIS** H. Smith, 1827

1827. *Axis* H. Smith, Griffith's Cuvier, Anim. Kingd. *5:* 312. *Cervus axis* Erxleben.
1846. *Hyelaphus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 180. *Cervus porcinus* Zimmermann. Valid as a subgenus.

2 species in the area covered by this list:
Axis axis, page 360
Axis porcinus, page 360

The latter is here separated subgenerically as *Hyelaphus*, and in this we follow Simpson; Pocock, 1943, *J. Bombay N.H. Soc. 44:* 174, gave it generic rank.

Subgenus *AXIS* H. Smith, 1827

Axis axis Erxleben, 1777 — Chital, Axis Deer, Spotted Deer

Approximate distribution of species: Ceylon and Peninsular India, northwards to Kumaon, Nepal, Sikkim, Bengal.

AXIS AXIS AXIS Erxleben, 1777

1777. *Cervus axis* Erxleben, Syst. Regn. Anim. 312. Banks of the Ganges, India.
1792. *Cervus axis maculatus* Kerr, Anim. Kingd. 300. Banks of the Ganges.
1829. *Cervus axis* var. *indicus* Fischer, Syn. Mamm. 619.
1831. *Cervus nudipalpebra* Ogilby, P.Z.S. *1830–31:* 136. Banks of the Ganges.
1842. *Axis major* Hodgson, J. Asiat. Soc. Bengal, *10:* 941.
1842. *Axis minor* Hodgson, *loc. cit.*

AXIS AXIS CEYLONENSIS Fischer, 1829

1829. *Cervus axis* var. *ceylonensis* Fischer, Syn. Mamm. 619. Ceylon.
1905. *Cervus (Rusa) axis zeylanicus* Lydekker, Field, *105:* 947.

Subgenus *HYELAPHUS* Sundevall, 1846

Axis porcinus Zimmermann, 1780 — Hog Deer (Para)

Approximate distribution of species: from Sind and the Punjab, through Kumaon, Nepal and Bengal to Assam, Burma, Indo-China and Siam. Not found in Peninsular India but in Ceylon, where it is said to have been introduced by the Dutch or Portuguese.

AXIS PORCINUS PORCINUS Zimmermann, 1780

1777. *Cervus porcinus* Zimmermann, Spec. Zool. Geogr. 532. Bengal. (Zimmermann (1777) is not an available work (Bull. Zool. Nomencl. 1950, *4:* 547)).
1780. *Cervus porcinus* Zimmermann, Geogr. Gesch. *2:* 131. Bengal.
1784. *Cervus porcinus* Schreber, Säugeth. *5*, pl. 251. Bengal (based on a specimen belonging to Lord Clive and described by Pennant, 1771).
?, 1827. *Cervus pumilio* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 120. Locality unknown.

(?) 1852. *Axis oryzus* Kelaart, Prodr. Faun. Zeyl. 83. Ceylon. Regarded by Pocock (1943) as a valid race.
1883. *Cervus minor* Sclater, List Anim. Zool. Gardens, 169; not of Hodgson, 1842. India.

Range: Indian range of the species above.

AXIS PORCINUS ANNAMITICUS Heude, 1888

1888. *Hyelaphus annamiticus* Heude, Mém. H.N. Emp. Chin, *2:* 50. Baria, Indo-China.
1908. *Cervus porcinus hecki* Lydekker, Field, *111:* 583. Siam.

Genus **CERVUS** Linnaeus, 1758

1758. *Cervus* Linnaeus, Syst. Nat. 10th ed. *1:* 66. *Cervus elaphus* Linnaeus.
1827. *Rusa* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 105. *Cervus unicolor* Kerr. Valid as a subgenus.
1827. *Elaphus* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 307. *Cervus elaphus* Linnaeus.
1838. *Harana* Hodgson, Ann. N.H. *1:* 154. *Cervus wallichii* Cuvier.
1838. *Rucervus* Hodgson, Ann. N.H. *1:* 154. *Cervus elaphoides* Hodgson = *Cervus duvaucelii* Cuvier. Valid as a subgenus.
1841. *Pseudocervus* Hodgson, J. Asiat. Soc. Bengal, *10:* 914. *Cervus wallichii* Cuvier.
1843. *Panolia* Gray, List. Mamm. B.M. 180. *Panolia acuticornis* Gray = *Cervus eldii* M'Clelland. Valid as a subgenus.
1846. *Hippelaphus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 177. Not of Reichenbach, 1835. *Cervus hippelaphus* Cuvier.
1846. *Strongyloceros* Owen, Brit. Foss. Mamm. Birds, 470. *Cervus elaphus* Linnaeus.
1870. *Sika* Sclater, P.Z.S. 115. *Cervus sika* Temminck = *Cervus nippon* Temminck. Valid as a subgenus.
1872. *Pseudaxis* Gray, Cat. Ruminants B.M. 70. *Cervus taiouanus* Blyth (a race of *C. nippon* Temminck).
1874. *Elaphoceros* Fitzinger, S.B. Akad. Wiss. Wien, *68,* 1: 347, 352. *Cervus sika* Temminck = *Cervus nippon* Temminck.
1888. *Sambur* Heude, Mém. H.N. Emp. Chin. *2:* 8. *Cervus aristotelis* Cuvier.
1898. *Sikaillus* Heude, Mém. H.N. Emp. Chin. *4:* 98. *Cervus sika* Temminck.
1898. *Sica* Trouessart, Cat. Mamm. 878. (Substitute for *Sika.*)
1899. *Eucervus* Acloque, Faune de France, Mamm. 71. Not of Gray, 1866. *Cervus elaphus* Linnaeus.
1930. *Przewalskium* Flerov, C.R. Acad. Sci. U.R.S.S. 115. *Cervus albirostris* Przewalski. Valid as a subgenus.
1943. *Thaocervus* Pocock, J. Bombay N.H. Soc. *43:* 554, 559. *Rucervus schomburgki* Blyth. Valid as a subgenus.

7 species in the area covered by this list:

Cervus albirostris, page 366
Cervus duvauceli, page 363
Cervus elaphus, page 367
Cervus eldi, page 364
Cervus nippon, page 364
Cervus schomburgki, page 363
Cervus unicolor, page 362

Each of these deer has a subgeneric name. Formerly, *eldi*, *schomburgki* and *duvauceli* were referred to *Rucervus*, but Pocock, 1943, *J. Bombay N.H. Soc. 43:* 553, in reviewing the group, separated the three species into three genera. See also Pocock, 1942, *J. Bombay N.H. Soc. 43:* 298, for a review of Indian *Cervus sensu stricto* compared with *Przewalskium* which contains the single species *albirostris*.

Lydekker retained three species in the subgenus *Sika* and seven in *Cervus sensu stricto*, but we have reduced them to one each. Many of the names which have been given to deer are based on antler differences which modern observations have shown to be well within the range of phenotypical variation, due to differences of feed. The non-genetic nature of much of this variability is well illustrated by the case of the British Red Deer which were imported into New Zealand (see Huxley, 1931, *P.Z.S.* 832). Here they soon came to resemble Carpathian Red Deer, but after a time, when the feed deteriorated on account of other activities of man, the deer "went back" and in the end came once more to resemble the small-sized deer, with relatively poorly developed antlers, which had been their starting point.

Lydekker gives the characters of the species here retained.

Subgenus *RUSA* H. Smith, 1827

Cervus unicolor Kerr, 1792 Sambar

Approximate distribution of species: Szechuan, Yunnan, Kwantung, Hainan, Formosa. Ceylon, northwards through Peninsular India to Kumaon and Nepal, Assam, Burma. Indo-China, Siam, Malay States, Sumatra, Java, Borneo, Celebes, the Philippines and many small Malayan islands.

CERVUS UNICOLOR UNICOLOR Kerr, 1792

1792. *Cervus axis unicolor* Kerr, Anim. Kingd. 300. Ceylon (as restricted by Hamilton Smith).
1792. *Cervus axis major* Kerr, Anim. Kingd. 300. Ceylon.
1799. *Cervus albicornis* Bechstein, Uebers. vierf. Thiere, *1:* 112. Substitute for *major*.
1898. *Cervus unicolor typicus* Lydekker, Deer of all Lands, 146.
Range: Ceylon (Pocock, 1943).

CERVUS UNICOLOR NIGER Blainville, 1816

1816. *Cervus niger* Blainville, Bull. Soc. Philom. Paris, 76. "Probably somewhere in North India" (Pocock).
1823. *Cervus aristotelis* Cuvier, Oss. Foss. ed. 2, *4:* 503. Nepal.
1823. *Cervus leschenaultii* Cuvier, Oss. Foss. ed. 2, *4:* 506. Coromandel, India.
1827. *Cervus hippelaphus* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 105. Not of Erxleben, 1777. ? Bengal.
1831. *Cervus jarai* Hodgson, Gleanings Science, *3:* 321. Nepal.
1841. *Cervus heterocerus* Hodgson, J. Asiat. Soc. Bengal, *10*, pl. opposite 722, and *10:* 914 (where the spelling is *heterocervus*).
1841. *Cervus nepalensis* Hodgson, *loc. cit.* Nepal.
1843. *Axis pennantii* Gray, List Mamm. B.M. 180. India.
Range: Peninsular India (apart from western desert and semi-desert areas) to Nepal.
The name is revived by Pocock, 1943, J. Bombay N.H. Soc. *44:* 30.

CERVUS UNICOLOR EQUINUS Cuvier, 1823

1823. *Cervus equinus* Cuvier, Oss. Foss. ed. 2, *4:* 45. Sumatra.
1861. *Cervulus cambojensis* Gray, P.Z.S. 138. Cambodia, Indo-China.
1888. *Sambur curvicornis* and *longicornis*, and *outreyanus* Heude, Mém. H.N. Emp. Chin. *2:* 42; and *S. planidens*, *S. colombertinus*, *S. combalbertinus*, 43; and *S. lignarius*, *S. lemeanus*, 44; and *S. errardianus*, *S. joubertianus*, *S. latidens*, *S. planiceps*, 45; and *S. officialis*, *S. simoninus*, *S. brachyrhinus*, *S. verutus*, 46. All from Cochin-China.
1896. *Rusa dejeani* Pousargues, Bull. Mus. H.N. Paris, *2:* 12. Szechuan, China. Status *fide* Pocock (1943).

Range: Sumatra, Malay States, Indo-China, Siam, Assam, Burma, Yunnan, Szechuan, Hainan.

CERVUS UNICOLOR SWINHOEI Sclater, 1862

1862. *Cervus swinhoii* Sclater, P.Z.S. 152. Formosa.

Subgenus *RUCERVUS* Hodgson, 1838

Cervus duvauceli G. Cuvier, 1823 — Swamp Deer; Barasingha

Approximate distribution of species: India, north of the Ganges from Kumaon to Assam, and south of the Ganges principally in the Central Provinces (Pocock).

CERVUS DUVAUCELI DUVAUCELI G. Cuvier, 1823

1823. *Cervus duvaucelii* G. Cuvier, Oss. Foss. ed. 2, *4:* 505. "Based on sketches of antlers sent by Duvaucel, locality not recorded but no doubt North India" (Pocock).
1834. *Cervus bahrainja* Hodgson, P.Z.S. 99. Nepal.
1835. *Cervus elaphoïdes* Hodgson, J. Asiat. Soc. Bengal, *4:* 648. Substitute for *bahrainja*.
1837. *Cervus smithii* Gray, P.Z.S. 45. The drawing in the British Museum on which this name is based is of a *duvaucelii* with aberrant antlers. Northern India.
1843. *Cervus dimorphé* Hodgson, J. Asiat. Soc. Bengal, *12:* 897. Saul Forests of the Morung, Nepal.
1850. *Cervus euceros* Gray, Knowsley Menagerie, pl. 40 (*euryceros* in text, p. 61). India.
1868. *Cervus eucladoceros* Falconer, Pal. Mem. *1:* 587. West bank of Ganges, south of Hardwar, United Provinces, India.

Range: north of the Ganges, India.

CERVUS DUVAUCELI BRANDERI Pocock, 1943

1943. *Rucervus duvaucelii branderi* Pocock, J. Bombay N.H. Soc. *43:* 558. Mandla, Central Provinces, India. Range: south of the Ganges, Central Provinces, India.

Subgenus *THAOCERVUS* Pocock, 1943

Cervus schomburgki Blyth, 1863 — Schomburgk's Deer

Approximate distribution of species: Siam, if not now extinct.

CERVUS SCHOMBURGKI Blyth, 1863

1863. *Cervus* or *Rucervus schomburgki* Blyth, P.Z.S. 155. Siam.

Subgenus *PANOLIA* Gray, 1843

Cervus eldi M'Clelland, 1842 Thamin, or Eld's Deer

Approximate distribution of species: Manipur, Burma, Hainan, Siam, Indo-China. Thomas, 1918, *J. Bombay N.H. Soc. 25:* 365, says that all references to Formosa in relation to British Museum specimens of this deer should be deleted and replaced by Hainan; the error is attributed to Gray or Gerrard.)

CERVUS ELDI ELDI M'Clelland, 1842

1842. *Cervus eldii* M'Clelland, Calcutta J.N.H. *2:* 417. Manipur, Assam.
1843. *Cervus (Rusa) frontalis* M'Clelland, Calcutta J.N.H. *3:* 401. Renaming of *eldii*.
1843. *Panolia acuticornis* Gray, List Mamm. B.M. 180. Manipur.
1845. *Cervus lyratus* Schinz, Synop. Mamm. *2:* 395. Based on M'Clelland (1841, which was a description without name).
1864. *Panolia acuticauda* Blyth, P.Z.S. *1863:* 370. Renaming of *frontalis*.
1898. *Cervus eldi typicus* Lydekker, Deer of all Lands, 200. Manipur.
1901. *Cervus eldi cornipes* Lydekker, Nature, *54:* 257. Manipur.

Range: Manipur.

CERVUS ELDI SIAMENSIS Lydekker, 1915

1915. *Cervus eldi siamensis* Lydekker, Cat. Ungulate Mamm. B.M. *4:* 104. Southern Siam. Renaming of *platyceros* Gray, 1843.
1843. *Panolia platyceros* Gray, List Mamm. B.M. 181. Siam. Not *Cervus platyceros* Cuvier, 1798.
(?) 1918. *Rucervus platyceros hainanus* Thomas, J. Bombay N.H. Soc. *25:* 364. Hainan Island, Southern China.

Range: Indo-China, Siam, Hainan.

CERVUS ELDI THAMIN Thomas, 1918

1918. *Rucervus thamin* Thomas, J. Bombay N.H. Soc. *25:* 364. Pegu, Burma.
1918. *Rucervus thamin brucei* Thomas, *loc. cit.:* 366. Thimbaung-Gwin Plain, Ruby Mines district, Upper Burma

Range: Burma, Tenasserim, Siam (in part).

Subgenus *SIKA* Sclater, 1870

Cervus nippon Temminck, 1838 Sika Deer, Japanese Deer

Approximate distribution of species: Southern Ussuri district of Eastern Siberia; Japan, Manchuria, Formosa; in China, Chihli, Shansi, and the eastern Yangtze Basin from Chekiang and Kiangsu into Northern Kwantung.

CERVUS NIPPON NIPPON Temminck, 1838

1838. *Cervus nippon* Temminck, Coup d'œil sur la faune des iles de la Sonde et de l'empire du Japon, xxii. Japan.
1845. *Cervus sika* Temminck, Fauna Japonica, Mamm. 54, pl. 17. Japan.
1846. *Cervus (Hippelaphus) japonicus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 178. Japan.
1878. *Cervus mantchuricus minor* Brooke, P.Z.S. 909. Japan. *Nec* Wagner, 1855.
1884. *Sika schlegeli* Heude, Cat. Cerfs Tachetés, 7; *fuscus*, 7, *hollandianus*, 8, all from "the small islands south of Japan"; *infelix*, 7, *brachypus*, 8, both from Goto Islands, Japan; *orthopus*, 8, Kobe, Japan; *blakistoninus*, *dolichorhinus*, *legrandianus*, 9, *yesoensis*, 10, *sylvanus*, 11, all from Nippon and Yezo; *aplodontus*, 10, north of Tokyo, *mitratus*, 10, Tokyo; *xendaiensis*, 11. Sendai, Nippon.
1888. *Sika paschalis* Heude, Mém. H.N. Emp. Chin. *2*, pl. 18, fig. 1; *aceros*, fig. 2; *rex*, fig. 5; *dejardinus*, fig. 6; *marmandianus*, pl. 19, fig. 6; all from Goto Islands, Nippon.
1893. *Cervus sica* Lydekker, Horns & Hoofs, 284. Emendation of *sika*.
1897. *Cervus sica typicus* Lydekker, P.Z.S. 39.
1897. *Sika sendaiensis* Heude, Mém. H.N. Emp. Chin. *3:* 98 (for *xendaiensis* 1884), *schizodonticus*, 101, Tokyo; *orthopodicus* (for *orthopus* 1884); *ellipticus*, *elegans*, Sendai; *minoensis*, 104, Mino, west of Tokyo; *rutilus*, 105, Yezo (= Hokkaido), Japan.
1898. *Sikaillus daimius* Heude, Mém. H.N. Emp. Chin. *4:* 101; *regulus*, 103; *sicarius*, 105; *consobrinus*, 107; *latidens*, 108; Goto Islands, Japan.

Range: Japan (Hondo, Hokkaido, Shikoku, Kiushu, Tsushima, Yakushima) and Korea.

CERVUS NIPPON TAIOUANUS Blyth, 1860

1860. *Cervus taiouanus* Blyth, J. Asiat. Soc. Bengal, *29:* 90. Formosa.
1862. *Cervus taëvanus* Sclater, P.Z.S. 152 (for *taiouanus* Blyth).
1872. *Pseudaxis taivanus* Gray, Cat. Ruminants, B.M. 70.
1882. *Cervus tai-oranus* Heude, Bull. Soc. Philom. *6:* 184 (emendation).
1882. *Cervus devilleanus* Heude, *loc. cit.* 187. Formosa.
1884. *Sika dominicanus* Heude, Cat. Cerfs Tachetés, 6, *novioninus*, *schulzianus*, *morrisianus*, 6, all from Formosa.

Range: Formosa.

CERVUS NIPPON HORTULORUM Swinhoe, 1864

1861. *Cervus pseudaxis* (?) Gray, P.Z.S. 236. *Nec* Gervais, 1841.
1864. *Cervus hortulorum* Swinhoe, P.Z.S. 169. "Gardens of the Summer Palace, Pekin." According to G. Allen, its true home was Manchuria.
1864. *Cervus mantchuricus* Swinhoe, P.Z.S. 169. Ying-tzu-kou, Newchwang, Manchuria.
1874. *Cervus euopis* Sclater, P.Z.S. 151. Newchwang, Manchuria.
1876. *Cervus dybowskii* Taczanowski, P.Z.S. 123. Southern Ussuri district of Manchuria.
1884. *Sika microspilus* Heude, Cat. Cerfs Tachetés, 11. Manchuria.
1889. *Cervus mantschuricus major* Noack, Humboldt, *8:* 9. Not of Kerr, 1792.
1894. *Sika imperialis* Heude, Mém. H.N. Emp. Chin. *2:* 146. Manchuria.
1910. *Cervus hortulorum typicus* Ward, Rec. Big Game, ed. 6, 52. Manchuria.

Range: Korea, Manchuria, and adjacent parts of Eastern Siberia; Quelpart Is.

CERVUS NIPPON MANDARINUS Milne-Edwards, 1871

1871. *Cervus mandarinus* Milne-Edwards, Rech. Mamm. 184. Said to have come from Northern China. This name is used by G. Allen for the race in Chihli, which he remarks is probably "now nearly exterminated".

1882. *Cervus cyclorhinus* Heude, Bull. Soc. Philom. *6:* 188; *hyemalis*, 188; both from Shantung Province, China.

CERVUS NIPPON KOPSCHI Swinhoe, 1873

1873. *Cervus kopschi* Swinhoe, P.Z.S. 574. Kien-chang, Kiangsi, Southern China.

1882. *Cervus frinianus* Heude, Bull. Soc. Philom. *6:* 185; *gracilis*, 185; *lachrymosus*, *ignotus*, 186; all from right bank of Yangtze, below Lake Poyang; *andreanus*, 186; *joretianus*, 187; both from Ningkwofu, 75 miles south of Nanking, Southern China.

1884. *Sika brachyrhinus* Heude, Cat. Cerfs Tachetés, 2; *cycloceros*, 2; *grilloanus*, *pouvrelianus*, *microdontus*, 3; *oxycephalus*, 4; *yuanus*, 5; all from right bank of Yangtze, below Lake Poyang.

1888. *Sika granulosus* Heude, Mém. H.N. Emp. Chin. *2*, pl. 0, fig. 2; *surdescens*, pl. 1A, fig. 9; no locality.

1894. *Sika riverianus* Heude, Mém. H.N. Emp. Chin. *2:* 153. Poyang Lake; *dugenneanus*, 156; *arietinus*, 162; no locality.

Range: eastern parts of Southern China.

CERVUS NIPPON GRASSIANUS Heude, 1884

1884. *Sika grassianus* Heude, Cat. Cerfs Tachetés, 12. Tsinglo-hsien, Northern Shansi, China. (Now nearly exterminated, G. Allen.)

CERVUS NIPPON KERAMAE Kuroda, 1924

1924. *Sika nippon keramae* Kuroda, on New Mamm. Riukiu Islands (Tokyo), 12. Zamamishima, Kerama Group, Middle Riukiu Islands.

Incertae sedis

1888. *Sika minutus* Heude, Mém. H.N. Emp. Chin. *2*, pl. 18, fig. 3; *kematoceros*, pl. 19, fig. 1; *modestus*, pl. 19, fig. 4; *fuscus*, pl. 19, fig. 5. No localities.

1924. *Cervus matsumotei* Kishida, Monogr. Jap. Mamm. 36. (*N.V.*) Hokkaido. "Doubtful form," according to Kuroda.

Subgenus *PRZEWALSKIUM* Flerov, 1930

Cervus albirostris Przewalski, 1883 Thorold's Deer

Approximate distribution of species: Szechuan, Kansu, Tibet and Kuku-nor.

CERVUS ALBIROSTRIS Przewalski, 1883

1883. *Cervus albirostris* Przewalski, Third Journey in C. Asia, 124. Three km. above mouth of Kokusu River, western Humboldt Mountains, Nan-Shan, Western Kansu, China.

1883. *Cervus sellatus* Przewalski, Third Journey in C. Asia, 125. Same locality.

1889. *Cervus dybowskii* Sclater, J. Asiat. Soc. Bengal, *58*, 2: 186. Not of Taczanowski, 1876. Bought in bazaar at Darjeeling.
1893. *Cervus thoroldi* Blanford, P.Z.S. 444, pl. 34. Two hundred miles north-east of Lhasa, Tibet.

Subgenus *CERVUS* Linnaeus, 1758

All named forms are here referred to one species *elaphus*, as explained in the note under the genus *Cervus* above.

Cervus elaphus Linnaeus, 1758 — Red Deer
(Wapiti, Hangul, Shou and others included)

Approximate distribution of species: the Palaearctic region, eastwards to Manchuria and Eastern Siberia, south to the Yangtze, and into the Indian region along the southern slopes of the Himalayas; Algeria and Tunis, where rare. North America.

(In more detail: British Isles and Europe (in parts re-established by man after earlier extinction), Portugal, Spain, France, Switzerland, Netherlands to Denmark, Norway, Sweden, Poland and Latvia; Germany, southwards to Rumania, Bulgaria and Greece; including Corsica, Sardinia and Italy (introduced); Western White Russia, Western Ukraine, Crimea, Caucasus, Russian Turkestan, and Southern Siberia from Tarbagatai and Altai Mountains to Tartarsk Straits and Sea of Japan, northwards roughly to the parallel of the northern tip of Lake Baikal (Bobrinskii); Asia Minor, Persia, Afghanistan; Zungaria, Mongolia, Manchuria; in China from the states of Kansu, Shansi, Szechuan; Tibet; Kashmir, Sikkim and Bhutan. Algeria, Tunis.)

Cervus elaphus elaphus Linnaeus, 1758

1758. *Cervus elaphus* Linnaeus, Syst. Nat. 10th ed. *1:* 67. Southern Sweden.
1898. *Cervus elaphus typicus* Lydekker, Deer of all Lands, 65.

Range: Sweden.

Cervus elaphus hippelaphus Erxleben, 1777

1777. *Cervus elaphus hippelaphus* Erxleben, Syst. Regn. Anim. *1*, Mammalia: 304. The Ardennes. (Schwarz, 1938, Z. f. Säuget. *8:* 276.)
1822. *Cervus elaphus germanicus* Desmarest, Mamm. 434. The Ardennes.
1822. *Cervus elaphus albus* Desmarest, Mamm. 435. Albino form. *Nec* Kerr, 1792.
1845. *Cervus elaphus albifrons* Reichenbach, Vollständ. Naturgesch. Säug. *3:* pl. 3 bis, fig. 26. (Tame variety.)
1874. *Cervus elaphus varius* Fitzinger, S.B. Akad. Wiss. Wien, *69*, 1: 574. Germany (partial albino).
1903. *Cervus vulgaris* Botezat, Morph. Jb. *32:* 115. Renaming of *elaphus*.
(?) 1903. *Cervus vulgaris campestris* Botezat, Morph. Jb. *32:* 154. Carpathian Mountains, Bukowina, Rumania.
(?) 1903. *Cervus vulgaris montanus* Botezat, *loc. cit.* 155. Carpathian Mountains.

CERVUS ELAPHUS HIPPELAPHUS [*contd.*]

1907. *Cervus balticus* Matschie, Weidwerk in Wort und Bild, *16:* 186. Near Liebemuhl, East Prussia, Germany.
1907. *Cervus albicus* Matschie, *loc. cit.* Muskau, Oberlausitz, Silesia, Germany.
1907. *Cervus rhenanus* Matschie, *loc. cit.* Viernheim, Hessen-Darmstadt, Germany.
1907. *Cervus bajovaricus* Matschie, *loc. cit.* Rohner, Konigssee, Upper Bavaria, Germany.
1912. *Cervus elaphus neglectus* Matschie, Deutsche Jäger-Zeit, *58:* 688. Posen, Germany.
1912. *Cervus elaphus visurgensis* Matschie, *loc. cit.* 734. Rhineland, Germany.
1912. *Cervus elaphus debilis* Matschie, *loc. cit.* 734. Rhineland.
1912. *Cervus elaphus saxonicus* Matschie, *loc. cit.* 737. Saxony, Germany.

Range: France, Holland, Belgium, Denmark, Italy, Central Europe and the Balkans, Western Russia.

CERVUS ELAPHUS CORSICANUS Erxleben, 1777

1777. *Cervus elaphus* var. *corsicanus* Erxleben, Syst. Regn. Anim. 304. Corsica.
1822. *Cervus mediterraneus* Blainville, J. Physique, *94:* 262. Corsica.
1848. *Cervus corsiniacus* Gervais, Ann. Sci. Nat. Zool. *10:* 206. Corsica.
1855. *Cervus elaphus minor* Wagner, Schreb. Säugeth. Suppl. *5:* 354. Substitute for *corsicanus*.

Range: Corsica, Sardinia.

CERVUS ELAPHUS WALLICHI Cuvier, 1823 Shou

1823. *Cervus wallichii* G. Cuvier, Oss. Foss. ed. 2, *4:* 505. Nepal (or probably Mansarowar Lake, Nari-Khorsum district, Tibet, according to Lydekker).
1841. *Cervus affinis* Hodgson, J. Asiat. Soc. Bengal, *10:* 721, Saul Forest, Nepal.
1850. *Cervus tibetanus* Hodgson, J. Asiat. Soc. Bengal, *19:* 466. Lingmo, Phari, Dingcham, Tibet.
1851. *Cervus nariyanus* Hodgson, J. Asiat. Soc. Bengal, *20*, pl. 8. Western Tibet.

Range: Chumbi Valley (Southern Tibet), Bhutan and Tibet; under the name *affinis* listed by Bobrinskii from Russian Middle Asia, Northern Afghanistan, the Amu-Darya.

CERVUS ELAPHUS BARBARUS Bennett, 1848 Barbary Stag

1848. *Cervus barbarus* Bennett, List Anim. Gardens Zool. Soc. London, 1833: 48 (nom. nud.); 1848 (February), Bennett in Fraser, Zool. Typica, pl. 13. Tunis. Range: the Barbary Stag is now confined to a strip of forest country on the Algerian-Tunisian border.

CERVUS ELAPHUS HANGLU Wagner, 1844. Hangul; Kashmir "Barasingha"

1844. *Cervus hanglu* Wagner, Schreb. Säugeth. Suppl. *4:* 352 (footnote). Kashmir.
1847. *Cervus casperianus* Gray, List Osteol. Specimens B.M. 747. Kashmir. Gray wrote "*cashmerensis*" and then, intending to emend the spelling, he for some reason put "*casperianus*" in the list of *errata*; this is clearly a *lapsus calami*.
1859. *Cervus cashmeriensis* Adams, P.Z.S. *1858:* 529.
1868. *Cervus cashmeerianus* Falconer, Palaeont. Mem. *1:* 576. Kashmir.
1871. *Cervus cashmirianus* Fitzinger, S.B. Akad. Wiss. Wien, *69*, 1: 586.

Range: Kashmir.

CERVUS ELAPHUS MARAL Gray, 1850. Maral

1840. *Cervus maral* Ogilby, Rep. Council Zool. Soc. 22, *nom. nud.*

1850. *Cervus maral* Gray, Knowsley Menagerie, pls. 38, 39. Persia. (These plates are of the specimens referred to by Ogilby.)

1886. *Cervus caspius* Radde, Fauna u. Flora südwestl. Caspi-Gebietes, 10. Talysh district of Azerbaijan, Transcaucasia.

1914. *Cervus caucasicus* Winans, Amer. Mus. J. *14:* 67, *nom. nud.*

Range: Lydekker regards this deer as ranging west to the Hungarian Carpathians, and thought the name *montanus* of Botezat, 1903, might be the same (see above, under synonymy of *C. e. hippelaphus*). Crimea, Asia Minor, Northern Persia, Caucasus.

CERVUS ELAPHUS XANTHOPYGUS Milne-Edwards, 1867 Manchurian Wapiti

1867. *Cervus xanthopygus* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 376. Near Pekin, Chihli, China.

1880. *Cervus lühdorfii* Bolau, Abh. Naturw. Hamburg, *7:* 33. Bureatish Steppe, Northern Manchuria.

1889. *Cervus isubra* Noack, Humboldt, *8:* 12, fig. 5. Based on same specimen as *lühdorfii.*

1892. *Elaphus ussuricus* Heude, Mém. H.N. Emp. Chin. *2:* 113. Ussuri River.

1897. *Cervus bedfordianus* Lydekker, P.Z.S. *1896:* 932. Manchuria.

1898. *Cervus xanthopygus typicus* Pousargues, Mém. Soc. Zool. France, *11:* 209.

Range: Manchuria, Mongolia, Amur-Ussuri region of Siberia.

CERVUS ELAPHUS SONGARICUS Severtzov, 1873

1873. *Cervus maral* var. *songarica* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8,* 2: 109. Zungarian Tian-Shan, probably near Kuldja, Chinese Turkestan.

1876. *Cervus eustephanus* Blanford, P.Z.S. *1875:* 637. Tian-Shan Mountains.

CERVUS ELAPHUS YARKANDENSIS Blanford, 1892

1892. *Cervus cashmirianus yarkandensis* Blanford, P.Z.S. 117. Maralbashi Forest, Chinese Turkestan.

CERVUS ELAPHUS ASIATICUS Lydekker, 1898

1898. *Cervus canadensis asiaticus* Lydekker, Deer of all Lands, 104. "The district to the southward of Lake Teletsk, near the sources of the Yenesei" (G. M. Allen, 1930).

1873. *Cervus maral* var. *sibirica* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8,* 2: 109. Siberia. Not *Cervus sibiricus* Schreber, 1784.

1907. *Cervus biedermanni* Matschie, S.B. Ges. Naturf. Fr. 223. Teletskoye Lake, at source of Ob, Siberia.

1915. *Cervus canadensis baicalensis* Lydekker, Cat. Ungulate Mamm. B.M. *4:* 134. Sayan and Baikal Mountains, west of Lake Baikal. To replace *sibirica* Severtzov, preoccupied.

Range: from the Altai to Transbaikalia.

CERVUS ELAPHUS BACTRIANUS Lydekker, 1900

1900. *Cervus bactrianus* Lydekker, Ann. Mag. N.H. *5:* 196. Tashkent, Russian Turkestan.

1904. *Cervus hagenbeckii* Shitkov, Zool. Jb. Abt. Syst. *20*, fig. 4 and p. 103. Russian Turkestan.

CERVUS ELAPHUS WACHEI Noack, 1902

1902. *Cervus wachei* Noack, Zool. Anz. *25:* 146. Shingielt Valley, in neighbourhood of the Black Irtish, Kobdo, Western Mongolia. ? Synonym of *asiaticus*.

CERVUS ELAPHUS ATLANTICUS Lönnberg, 1906

1906. *Cervus elaphus atlanticus* Lönnberg, Arkiv. Zool. *3*, 9: 9. Hitteren Island, Trondhjem, Norway. Range: west coast of Norway.

CERVUS ELAPHUS SCOTICUS Lönnberg, 1906

1906. *Cervus elaphus scoticus* Lönnberg, Arkiv. Zool. *3*, 9: 11. Glenquoich Forest, Inverness, Scotland. Range: England, Scotland, Ireland.

CERVUS ELAPHUS MACNEILLI Lydekker, 1909

1909. *Cervus cashmirianus macneilli* Lydekker, P.Z.S. 588, pl. 69. Szechuan border of Tibet.

1910. *Cervus canadensis wardi* Lydekker, Abstr. P.Z.S. 38; 1911, P.Z.S. *1910:* 987. Szechuan border of Tibet.

CERVUS ELAPHUS HISPANICUS Hilzheimer, 1909

1909. *Cervus elaphus hispanicus* Hilzheimer, Archiv. für Rassen-und-Gesellschafts-Biol. *6:* 313. Province of Huelva, between the Rio Odiel and the Guadalquivir, Spain (Cabrera, 1911).

(?) 1911. *Cervus elaphus bolivari* Cabrera, Bol. Soc. Esp. H.N. *11:* 558. El Pardo, Madrid, Spain.

Range: Spain and Portugal.

CERVUS ELAPHUS KANSUENSIS Pocock, 1912

1912. *Cervus kansuensis* Pocock, P.Z.S. 573. Thirty miles south-east of Taochow, Kansu, China.

CERVUS ELAPHUS ALASHANICUS Bobrinskii & Flerov, 1935

1935. *Cervus canadensis alashanicus* Bobrinskii & Flerov, Arch. Mus. Zool. Moscou, *1:* 29. Alashansk Range, South-Eastern Mongolia.

Incertae sedis

Elaphus minoratus Heude, 1892, Mém. H.N. Emp. Chin. *2:* 113. No locality.

Genus **ELAPHURUS** Milne-Edwards, 1866

1866. *Elaphurus* Milne-Edwards, Ann. Sci. Nat. Zool. *5:* 382. *Elaphurus davidianus* Milne-Edwards.

1 species: *Elaphurus davidianus*, page 371

Elaphurus davidianus Milne-Edwards, 1866 Mi-lu, or Père David's Deer

Approximate distribution of species: the original range appears to have been the great alluvial plain of North-Eastern China, as far south as the Yangtze and Ch'ien-t'ang estuaries, but it became extinct in the wild state after the Shang Dynasty (Sowerby, 1949), and by the time Père David sent his specimen home to Milne-Edwards the only survivors of this deer were those in the walled Imperial Hunting Park, south of Pekin. During the Boxer Rising in 1900 these deer escaped, and some were sent to Europe. The only deer to survive the rising in China were a few which were taken to Pekin itself where, by 1911, only two specimens remained alive. By 1921 these had died. The only survivors today are the Duke of Bedford's herd at Woburn, founded by specimens sent to Europe in 1900, and a small herd at Whipsnade Zoological Park and a few specimens in the Bronx Zoo, New York, all derived from the Woburn herd.

Elaphurus davidianus Milne-Edwards, 1866

1866. *Elaphurus davidianus* Milne-Edwards, Ann. Sci. Nat. Zool. *5:* 382. Imperial Hunting Park, Pekin, Chihli, China (captivity).
1867. *Cervus tarandoïdes* David, Nouv. Arch. Mus. H.N. Paris, *3*, Bull.: 28.
1933. *Cervus* (*Rucervus*) *menziesianus* Sowerby, China J. *19:* 141. Near Anyang, Honan. (Based on fragments of antlers discovered in the course of archæological excavations.)

Subfamily Odocoileinae

As understood by Simpson (1945). Simpson makes each of the living Palaearctic genera the type of a Tribe. We exclude *Hydropotes*, as noted in the introduction to the Cervidae above.

For characters of genera referred here, see Lydekker (1915).

Genus **CAPREOLUS** Gray, 1821

1775. *Capreolus* Frisch, Natur-System der vierfüss. Thiere, 3 (see page 2).
1821. *Capreolus* Gray, London Med. Repos. *15:* 307. *Cervus capreolus* Linnaeus.
1837. *Caprea* Ogilby, P.Z.S. *1836:* 135. *Cervus capreolus* Linnaeus.

1 species: *Capreolus capreolus*, page 371

Capreolus capreolus Linnaeus, 1758 Roe Deer

Approximate distribution of species: widely distributed in the Palaearctic region (except in the extreme north and not occurring in North-Western India).

(In detail: Britain, France, Spain and Portugal, Netherlands, Switzerland, Italy, Norway and Sweden, Germany, Poland, thence south-eastwards to Greece. Western

Russia (north approximately to Leningrad, with isolated populations in forests on Upper Don and in Crimea); Caucasus; Hissar and Alai Mountains, Tian-Shan Mountains, parts of Western Siberia (Lower Urals, basins of Middle Tobol and Ishim, whence it is spreading as far as Central Kazakstan and to the Irtish); Altai and Eastern Siberia, as far as Tatarsk Strait and Sea of Japan, north approximately to a line through Tomsk, Nishne-Ilimsk, northern tip of Lake Baikal, Southern Yakutia, etc. (Russian details condensed from Bobrinskii.) Manchuria, Mongolia, Western Chinese Turkestan, states of Chihli, Shansi, Shensi, Kansu, Szechuan in China. Persia, and Asia Minor, to Northern Iraq.)

CAPREOLUS CAPREOLUS CAPREOLUS Linnaeus, 1758

1758. *Cervus capreolus* Linnaeus, Syst. Nat. 10th ed. *1:* 68. Sweden.
1792. *Cervus capreolus albus* Kerr, Anim. Kingd. 302. Franche Comte, France.
1830. *Capreolus dorcas* Burnett, Quart. J. Sci. Lit. Art. *1829*, 2: 353, *nom. nud.*
1832. *Capreolus vulgaris* Fitzinger, Beitr. Landesk. Österreichs, *1:* 317.
1843. *Capreolus capraea* Gray, List. Spec. Mamm. B.M. 176. Renaming of *capreolus.*
1845. *Cervus capreolus plumbeus* Reichenbach, Naturg. Säugeth. *3*, pl. 3 bis, fig. 53. Germany.
1846. *Capreolus europaeus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 184.
1874. *Capreolus vulgaris niger* Fitzinger, S.B. Akad. Wiss. Wien, *70*, 1: 247. Germany.
1874. *Capreolus vulgaris varius* Fitzinger, *loc. cit.* Germany.
1907. *Capreolus transsylvanicus* Matschie, Weidwerk in Wort u. Bild, *16:* 224. Bana, Rumania.
1910. *Capreolus capreolus balticus* Matschie, Weidwerk in Wort u. Bild, *19:* 263. Wichertshof, East Prussia. (April, 1910.)
1910. *Capreolus capreolus albicus* Matschie, *loc. cit.* Jesziorki, near Lissa, Poland.
1910. *Capreolus capreolus rhenanus* Matschie, *loc. cit.* Rouffach, Haute-Rhin, France.
1910. *Capreolus capreolus thotti* Lönnberg, Ann. Mag. N.H. *6:* 297. (September, 1910.) Arndilly, Craig Ellachie, Morayshire, Scotland. (Not Aberfeldy, as stated by Lönnberg.)
1910. *Capreolus capreolus canus* Miller, Ann. Mag. N.H. *6:* 460. (November, 1910.) Quintanar de la Sierra, Burgos, Spain.
1912. *Capreolus capreolus warthae* Matschie, Dtsch. Jägerztg. *58:* 801. Dombrowa, east of Beuthen, Poland.
1913. *Cervus (Capreolus) capreolus cistaunicus* Matschie, Veröff. Inst. Jagdk. Neudamm, *2:* 139. Dunnwald, north of Cologne, Germany.
1913. *Cervus (Capreolus) capreolus transvosagicus* Matschie, *loc. cit.* Staufen, in the Vosges, Eastern France.
1916. *Capreolus capreolus decorus* Cabrera, Bol. Soc. Esp. H.N. *16:* 175. El Vierzo, Province of Léon, Spain. (March, 1916.)
1916. *Capreolus capreolus armenius* Blackler, Ann. Mag. N.H. *18:* 78. Sumela, near Trebizond, Asia Minor. (July, 1916.)
1916. *Capreolus capreolus joffrei* Blackler, Ann. Mag. N.H. *18:* 79. Ferrières, Paris, France.
1916. *Capreolus zedlitzi* Matschie, S.B. Ges. Naturf. Fr. Berlin, 272. Slonim, Poland. (December, 1916.)
1923. *Capreolus coxi* Cheesman & Hinton, Ann. Mag. N.H. *12:* 608. Zakho, Northern Iraq.

1925. *Capreolus capreolus italicus* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *40*, 37: 1. Castelporziano, Central Italy.
1925. *Capreolus capreolus grandis* Bolkay, Novit. Mus. Sarajevo, *1:* 14. Neighbourhood of Sarajevo, Yugoslavia.
1933. *Capreolus capreolus grandis* morpha *baleni* Martino, O šar-planinskom srndaću, 2 (of reprint). Shar-Planina, borders of Albania and Yugoslavia.
1936. *Capreolus capreolus whittalli* Barclay, Ann. Mag. N.H. *17:* 405. Near Alemdagh, 15 miles from Moda, Istanbul, Turkey.

Range: Europe, including England, Scotland, Wales, Russia, Asia Minor, Persia.

Capreolus capreolus pygargus Pallas, 1771

1771. *Cervus pygargus* Pallas, Reise Russl. *1:* 453. River Sok, Samara district, Volga, Russia.
1906. *Capreolus tianschanicus* Satunin, Zool. Anz. *30:* 527. Kuldja, Chinese Tian Shan Mountains.
1909. *Capreolus pygargus firghanicus* Rasewig, Semja ochoton. Moskva, *1909:* 160. Fergana district, Russian Turkestan. (*N.V.*)

Range: Central Asia (Altai and Tian Shan Mountains), westwards to the Urals and the Volga; northerly and easterly distribution uncertain.

Capreolus capreolus bedfordi Thomas, 1908

1908. *Capreolus bedfordi* Thomas, Abstr. P.Z.S. 32; 1908, P.Z.S. 645. Mt. Chao-Cheng-Shan, 100 miles west-north-west of Taiyuenfu, Shansi, China.
1889. *Cervus pygargus mantschuricus* Noack, Humboldt, *8:* 9. Eastern Manchuria. Not *mantchuricus* Swinhoe, 1864.
1911. *Capreolus melanotis* Miller, Proc. Biol. Soc. Washington, *24:* 231. Thirty miles east of Ching-yang-fu, Kansu, China.
1935. *Capreolus capreolus ochracea* Barclay, Ann. Mag. N.H. *15:* 627. Korea.

Range: Szechuan, Kansu, Shansi, Chihli, Manchuria, Korea, Northern Mongolia, South-Eastern Siberia (Amur-Ussuri region). Quelpart I.

Genus **ALCES** Gray, 1821

1775. *Alce* Frisch, Natur-System der Vierf. Thiere, 3.
1821. *Alces* Gray, London Med. Repos. *15:* 307. *Cervus alces* Linnaeus. (Opinion 91 of the International Commission on Zoological Nomenclature says that the European Elk should be called *Alces* Gray, 1821, with *Cervus alces* Linnaeus as type species.)
1841. *Alcelaphus* Gloger, Handb. Naturges. 143. (Substitute for *Alces*.)
1902. *Paralces* J. Allen, Bull. Amer. Mus. N.H. *16:* 160. (Substitute for *Alces*.)

1 species: *Alces alces*, page 373

Alces alces Linnaeus, 1758 Moose, or Elk (in European sense)

Approximate distribution of species: Norway, Sweden, East Prussia, thence eastwards across Russia and Siberia (not including Kamtchatka); Manchuria, Mongolia. Northern North America.

For European details, see under *A. a. alces*. In U.S.S.R., "in East Europe and Trans-Lena Siberia the northern limit in general coincides with that of full-grown forest, but in West and to some extent in Central Siberia it comes a long way south in a wide, shallow arc roughly to the 60th parallel. . . . The southern limit in the U.S.S.R. runs roughly along the southern border of White Russia, proceeds to Ryazan, dips far south in a long tongue, returns north almost to Gorki, turns south again but in a wide tongue along the right side of the Volga, approximately to 52° 50′, continues along the Kama and then the Lower Belaya, dips down along the Southern Urals roughly to Magnitogorsk and returns north almost to Sverdlovsk.

South of this line, particularly in area between the Don and Volga, elks make fairly long incursions. They also occur isolated in the Buzuluk pine forest (between Kuibuishev and Chkalov). In Siberia the limit runs roughly from Sverdlovsk to Tomsk, roughly coinciding with the southern limit of the continuous taiga, reaches the Yenesei a little below Krasnoiarsk, skirts round the east of the Minussinsk steppes, takes in the Eastern Altai, and passes out into Northern Mongolia. Beyond the Yenesei the elk fails to occur in the steppe parts of Transbaikalia and in the extreme south of Ussuri region, and is not found in Sakhalin" (Bobrinskii).)

ALCES ALCES ALCES Linnaeus, 1758

1758. *Cervus alces* Linnaeus, Syst. Nat. 10th ed. *1:* 66. Sweden.
1827. *Cervus coronatus* Lesson, Man. Mamm. 356.
1830. *Alces europaeus* Burnett, Quart. J. Sci. Lit. Art. *1829*, 2: 353, *nom. nud.*
1837. *Alces machlis* Ogilby, P.Z.S. *1836:* 135. Renaming of *alces*.
1841. *Alcelaphus alce* Gloger, Handb. Naturgesch. *1:* 143.
1842. *Alces antiquorum* Ruppell, Mus. Senckenb. *3:* 183. Renaming of *alces*.
1843. *Alces palmatus* Gray, List Mamm. Coll. B.M. 182.
1860. *Alces jubata* Fitzinger, Nat. Säugeth. *4:* 86 (*N.V.*) Renaming of *alces*.
1910. *Alces machlis typicus* Ward, Rec. Big Game, ed. 6, 99.
1913. *Alces machlis uralensis* Matschie, Veröff. Inst. Jagdk. Neudamm, *2:* 155. District of Samara, Russia.
1915. *Alces machlis tymensis* Zukowsky, Arch. Naturgesch. Berlin, *80A*, 9: 42. River Tym, Siberia.
1915. *Alces machlis angusticephalus* Zukowsky, *loc. cit.* 44. Yeneseisk District, Siberia.

Range: Scandinavia, Lapland, Finland, Baltic States, East Prussia, Poland, Russia and Siberia as far as Yenesei River and Lake Baikal.

ALCES ALCES CAMELOIDES Milne-Edwards, 1867

1867. *Cervus cameloides* Milne-Edwards, Ann. Sci. Nat. Zool. *7:* 377. Probably from Manchuria.
1902. *Alces bedfordiae* Lydekker, P.Z.S. *1902*, 1: 109. Siberia.
1910. *Alces pfizenmayeri* Zukowsky, Wild und Hund, *16:* 807. River Aldan, North-Eastern Siberia.
1911. *Alces machlis yakutskensis* Millais, The Field, London, *118:* 113. River Aldan, North-Eastern Siberia (based on same material as *pfizenmayeri*).

Range: Siberia, east of the Yenesei, Mongolia, Manchuria.

Genus **RANGIFER** H. Smith, 1827

1775. *Rangifer* Frisch, Natur-System der vierfüss. Thiere, 3.
1827. *Rangifer* H. Smith, Griffith's Cuvier Anim. Kingd., Mamm. Syn. 304. *Cervus tarandus* Linnaeus.
(Opinion 91 of the International Commission on Zoological Nomenclature states that *Rangifer* should date from H. Smith, 1827, with *Cervus tarandus* Linnaeus as type species.)
1827. *Tarandus* Billberg, Syn. Faun. Scand. *1:* 22. *Tarandus lapponum* Billberg = *Cervus tarandus* Linnaeus.
1845. *Achlis* Reichenbach, Naturges. Säugeth. *3:* 12. Alternative for *Tarandus*.

See Jacobi, A., 1931, Das Rentier, *Zool. Anzeiger, 96* (Ergänzungsbd): 1–264. Flerov, C. C., 1933, Review of the Palaearctic Reindeer or Caribou, *J. Mammal, 14:* 328.

1 species: *Rangifer tarandus*, page 375

Rangifer tarandus Linnaeus, 1758 — Reindeer, Caribou

Approximate distribution of species: Arctic regions of Old and New Worlds, local distribution modified by human agency. Norway, Spitzbergen, Finland, Arctic regions of Russia, Arctic Siberia, east to Kamtchatka and Sakhalin, south to Mongolia and nearly to Chinese border in the east (Bobrinskii). Arctic regions of North America, Greenland included.

Rangifer tarandus tarandus Linnaeus, 1758

1758. *Cervus tarandus* Linnaeus, Syst. Nat. 10th ed. *1:* 67. Alpine region of Swedish Lapland.
1788. *Cervus tarandus rangifer* Gmelin, Syst. Nat. 13th ed. *1:* 177.
1827. *Tarandus lapponum* Billberg, Synops. Faun. Scand. *1:* 22. Renaming of *tarandus*.
1842. *Tarandus borealis* Rüppell, Mus. Senckenb. *3:* 183. Renaming of *tarandus*.
1852. *Tarandus furcifer* Baird, Rep. Comm. Patents, 1851, *2*, Agric. 109. (*N.V.*) Renaming of *tarandus*.
1898. *Rangifer tarandus typicus* Lydekker, Deer of all Lands, 38.
1902. *Rangifer tarandus* var. *cilindricornis* Camerano, Mem. R. Accad. Torino, *51:* 167. Renaming of *tarandus*.
1909. *Rangifer tarandus fennicus* Lönnberg, Arkiv. Zool. *6*, 4: 10. Torne, Lappmark, Finland.
1936. *Rangifer tarandus silvicola* Hilzheimer, Z. Säuget. *11:* 155. Olenez district, Russia.

Range: Scandinavia, to Russia.

Rangifer tarandus platyrhynchus Vrolik, 1829

1829. *Cervus* (*Tarandus*) *platyrhynchus* Vrolik, Nieuwe Verh. Konink. Nederl. Inst. Eerste Klasse, *2:* 160. Spitzbergen.
1862. *Cervus tarandus* forma *spetsbergensis* Andersen, Öfvers. Vek. Akad. Förhandl. *19:* 457. Spitzbergen.

RANGIFER TARANDUS PLATYRHYNCHUS [*contd.*]

1866. *Rangifer arcticus* var. *spitzbergensis* Murray, Geogr. Distrib. Mamm. 334 (described on p. 155). Spitzbergen.

RANGIFER TARANDUS SIBIRICUS Murray, 1866

1866. *Rangifer tarandus sibiricus* Murray, Geogr. Distrib. Mamm. 334 (described on p. 155). Siberia, eastward of the River Lena. (*sibiricus* Schreber, 1784, is not a valid name. The word is used to indicate the provenance of the particular reindeer illustrated in pl. 284C of Theil 5.)

1915. *Tarandus rangifer lenensis* Millais, the Big Game of Asia and North America, 219 (The Gun at Home and Abroad, *4*). Delta of River Lena.

1915. *Tarandus rangifer chukchensis* Millais, *loc. cit.* 220. Delta of River Lena (a domesticated form).

1915. *Tarandus rangifer yakutskensis* Millais, *loc. cit.* 222. Yakutsk (a domesticated form).

1931. *Rangifer arcticus asiaticus* Jacobi, Zool. Anz. *96* (Ergänzungsbd): 85. Kolyma River, North-Eastern Siberia. (Renaming of *sibiricus* Murray.) (The type was a tame animal.)

1936. *Rangifer tarandus transuralensis* Hilzheimer, Z. Säuget. *11:* 155. Konda River, Western Siberia.

Range: Siberian and Eastern European tundra zone; Novosibirskie Islands, Arctic Sea.

RANGIFER TARANDUS PEARSONI Lydekker, 1903

1903. *Rangifer tarandus pearsoni* Lydekker, P.Z.S. *1902, 2:* 361. Island of Novaya Zemlya.

RANGIFER TARANDUS PHYLARCHUS Hollister, 1912

1912. *Rangifer phylarchus* Hollister, Smiths. Misc. Coll. *56,* 35: 6. South-Eastern Kamtchatka. Range includes coast of Okhotsk Sea and Amurland.

RANGIFER TARANDUS ANGUSTIROSTRIS Flerov, 1932

1932. *Rangifer angustirostris* Flerov, Trav. Comm. Rep. S.S. Iakoute, *4:* 8. Bargusin Mountains, north-eastern coast of Lake Baikal.

RANGIFER TARANDUS VALENTINAE Flerov, 1933

1933. *Rangifer tarandus valentinae* Flerov, J. Mamm. *14:* 336. Head of Chulyshman River, North-Eastern Altai, Siberia.

(?) 1915. *Tarandus rangifer buskensis* Millais, The Big Game of Asia and North America, 222 (The Gun at Home and Abroad, *4*). Busk Mountains, near Semipalatinsk, Siberia.

Range: forest zone of Siberia, south to Northern Mongolia and Altai Mountains.

RANGIFER TARANDUS SETONI Flerov, 1933

1933. *Rangifer tarandus setoni* Flerov, J. Mamm. *14:* 337. Sakhalin Island, Eastern Siberia.

FAMILY BOVIDAE

Genera: *Addax*, page 384
Ammotragus, page 409
Antilope, page 386
Bison, page 382
Bos, page 379
Boselaphus, page 379
Bubalus, page 383
Budorcas, page 396
Capra, page 404
Capricornis, page 399
Gazella, page 388
Hemitragus, page 403
Naemorhedus, page 401
Oryx, page 385
Ovis, page 411
Pantholops, page 395
Procapra, page 387
Pseudois, page 410
Rupicapra, page 397
Saiga, page 395
Tetracerus, page 378

Alcelaphus Blainville, 1816, *Bull. Soc. Philom. Paris*, 75 (= *Bubalis* Frisch, 1775, *Natur-System der vierfüss. Thiere*, 2—unavailable, see p. 2); *Alcelaphus buselaphus buselaphus* (*Antilope buselaphus* Pallas, 1766, *Misc. Zool.* 7—type locality probably Morocco) formerly ranged across North Africa from Morocco to Egypt, but became extinct some time in the 1920's. Other races of the species *buselaphus* occur in Africa, from Senegal to Somaliland, and Tanganyika. For details and for a full synonymy of the typical race, see G. Allen, 1939, *Checklist of African Mammals*, 470.

This family is very difficult to classify and no two authors agree on the various subfamilies or minor divisions, some of which seem to be indefinable and unconvincing. The characters of most of the species and genera are to be found in Lydekker, but his key to subfamilies, spread as it is over three different volumes, is far from clear.

Blanford (1891, 482) gives a key to the genera inhabiting India. But, in part, this may not hold good for species or genera extralimital to India.

Of the genera here listed, *Addax* and *Ammotragus* are solely African.

An extremely interesting and instructive paper on this family is Pocock, 1911, On the specialized cutaneous glands of ruminants, *P.Z.S. 1910:* 840.

Simpson (1945, 270–272) discusses the grouping of the family in some detail, and his classification is followed here. According to his list, with some slight generic modification, the living genera now under discussion are classified as follows:

Subfamily: Bovinae
Tribe: Boselaphini
Boselaphus, *Tetracerus*
Tribe: Bovini
Bos, *Bison*, *Bubalus*

Subfamily: Hippotraginae
Tribe: Hippotragini
Addax, *Oryx*
(Tribe: Alcelaphini
Alcelaphus[1])

[1] Now extinct in the Palaearctic region.

Subfamily: Antilopinae

Tribe: Antilopini
Antilope, *Gazella*, *Procapra*

Subfamily: Caprinae

Tribe: Saigini
Saiga, *Pantholops*

Tribe: Rupicaprini
Capricornis, *Naemorhedus*, *Rupicapra*

Tribe: Ovibovini
Budorcas

Tribe: Caprini
Hemitragus, *Capra*, *Pseudois*, *Ammotragus*, *Ovis*

Subfamily Bovinae

(As understood by Simpson, 1945)

Many authors prefer to refer *Boselaphus* and *Tetracerus* to a distinct subfamily Boselaphinae, and restrict the Bovinae to *Bos*, as here understood, *Bison* and *Bubalus*.

Genus **TETRACERUS** Leach, 1825

1825. *Tetracerus* Leach, Trans. Linn. Soc. London, *14:* 524. *Antilope chickara* Hardwicke = *Cerophorus quadricornis* Blainville.
1827. *Tetraceros* Brookes, Brookesean Museum (2nd ed.), 8. For *Tetracerus*.

1 species: *Tetracerus quadricornis*, page 378

Tetracerus quadricornis Blainville, 1816 Four-horned Antelope; Chousingha

Approximate distribution of species: Peninsula of India; from Madras and Eastern Ghats north at least to Kathiawar and Central Provinces.

Tetracerus quadricornis Blainville, 1816

1816. *Cerophorus* (*Cervicapra*) *quadricornis* Blainville, Bull. Soc. Philom. Paris, 75 and 78. Plains of Peninsular India.
1825. *Antilope chickara* Hardwicke, Trans. Linn. Soc. London, *14:* 520, pls. 15, 16. Western Provinces of Bengal, Bihar and Orissa, India.
1828. *Tetraceros striatocornis* Brookes, Cat. Mus. 64. No locality.
1836. *Antilope tetracornis* Hodgson, J. Asiat. Soc. Bengal, *4:* 525. No locality.
1839. *Antilope sub-4-cornutus* Elliot, Madras J. Lit. *10:* 225. Southern Mahratta country, India.
1843. *Tetracerus subquadricornis* Gray, List Mamm. B.M. 159.
1847. *Tetracerus subquadricornutus* Hodgson, Calcutta J.N.H. *8:* 89. Emendation of *sub-4-cornutus*.

1847. *Tetracerus iodes* Hodgson, Calcutta J.N.H. *8:* 90. "Saul forests beneath the Sub-Himalayas."
1847. *Tetracerus paccerois* Hodgson, *loc. cit.*, same locality.
1895. *Tetraceros quadricornis typicus* Sclater & Thomas, Book of Antelopes, *1:* 215.

Cerophorus Blainville, 1816, *Bull. Soc. Philom. Paris*, 74, is really equivalent to "Bovidae" since it includes all ruminants "qui sont toujours la tête armée", not counting the giraffe, as opposed to camels, and deer (where the head armature is seasonal).

Genus **BOSELAPHUS** Blainville, 1816

1816. *Boselaphus* Blainville, Bull. Soc. Philom. Paris, 75. *Antilope picta* Pallas = *Antilope tragocamelus* Pallas.
1827. *Portax* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 366. *Damalis risia* Smith = *Antilope tragocamelus* Pallas.
1851. *Bosephalus* Horsfield, Cat. Mamm. Mus. E. Ind. Co. 169. Error for *Boselaphus*.

1 species: *Boselaphus tragocamelus*, page 379

Boselaphus tragocamelus Pallas, 1766 — Nilgai; Blue Bull

Approximate distribution of species: Peninsular India, from the base of the Himalayas to Mysore, in Eastern Punjab, Gujerat, North-West Provinces and parts of Bombay. (Not in Eastern Bengal, or east of that, and not on the Malabar coast.) (Dunbar Brander, 1927.)

BOSELAPHUS TRAGOCAMELUS Pallas, 1766

1766. *Antilope tragocamelus* Pallas, Misc. Zool. 5. Plains of Peninsular India.
1777. *Antilope albipes* Erxleben, Syst. Regn. Anim. 280. India.
1777. *Antilope picta* Pallas, Spicil. Zool. *12:* 14. India.
1827. *Damalis risia* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 363. Substitute for *picta*.
1837. *Tragelaphus hippelaphus* Ogilby, P.Z.S. *1836:* 138. Substitute for *picta*.
1846. *Portax tragelaphus* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 198. Corrected to *tragocamelus*, *1845:* 323.

Genus **BOS** Linnaeus, 1758

1758. *Bos* Linnaeus, Syst. Nat. 10th ed. *1:* 71. *Bos taurus* Linnaeus (Domestic Cattle).
1814. *Taurus* Rafinesque, Princip. Somiol., 30. Renaming of *Bos* Linnaeus.
1827. *Urus* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 417. *Urus scoticus* Smith (white Park Cattle).
1837. *Bibos* Hodgson, J. Asiat. Soc. Bengal, *6:* 499. *Bibos subhemachalus* Hodgson = *Bos gaurus* H. Smith. Valid as a subgenus.
1843. *Poëphagus* Gray, List Mamm. B.M. 153. *Bos grunniens* Linnaeus. Valid as a subgenus.
1847. *Gaveus* Hodgson, J. Asiat. Soc. Bengal, *16:* 705. *Bos frontalis* Lambert.
1901. *Gauribos* Heude, Mém. H.N. Emp. Chin. *5*, 1: 3. *Gauribos laosiensis* Heude.

Bos [*contd.*]

1901. *Uribos* Heude, Mém. H.N. Emp. Chin. *5*, 1: 5. *Uribos platyceros* Heude.
1901. *Bubalibos* Heude, Mém. H.N. Emp. Chin. *5*, 1: 6. *Bubalibos annamiticus* Heude.
1940. *Novibos* Coolidge, Mem. Mus. Comp. Zool. Harvard, *54:* 425. *Bos* (*Bibos*) *sauveli* Urbain.

4 species: *Bos banteng*, page 381
Bos gaurus, page 381
Bos grunniens, page 382
Bos sauveli, page 382

The type species is domestic. The generic divisions for the various kinds of wild oxen living today are not very clear. As many as eight genera have been recognized: *Bos*, *Bibos*, *Novibos*, *Poëphagus*, *Bison*, *Anoa*, *Bubalus* and *Syncerus* (the last three comprise the buffaloes). Those who regard all eight as valid genera restrict *Bos* to domestic oxen and their extinct allies. Lydekker (1913) referred all oxen to one genus *Bos*, and recognized four extra subgenera, *Bibos*, *Poëphagus*, *Bison* and *Bubalus* (the last containing all buffaloes).

Other authors compromise between these two extremes, and Simpson (1945) recognizes all save *Novibos* and *Poëphagus*. The latter he refers to *Bos*, though it would seem that it is more worthy of generic distinction than *Bibos*. *Novibos*, which Coolidge erected (on the basis of one specimen) in 1940 for the Kouprey of Cambodia seems doubtfully valid.

If there is to be generic distinction between the living ox-like Bovinae, then it should be between the buffaloes, for which the prior name is *Anoa*, and the remainder. This view appears to be supported, too, by Pilgrim's work on living and fossil Bovidae. It is adopted in this list, but although Pocock (1918) regarded *Anoa* and *Bubalus* as congeneric, we do not feel it is advisable to use *Anoa* as the generic name for the Indian buffalo, so we follow those authors who restrict that name to the dwarf species from Celebes and Philippines. Also *Bison*, universally admitted by American authors and much the most distinct of the groups which perhaps should be referred to the genus *Bos*, is tentatively retained.

Subgenus *BIBOS* Hodgson, 1837

The first name in the subgenus is *Bos frontalis* Lambert, 1804, *Trans. Linn. Soc. London*, *7:* 57, which was based on a specimen of the domestic Gayal, probably from North-Eastern Chittagong. Lydekker (1913) regarded the next name, *Bos sylhetanus* F. Cuvier, in Geoffroy & Cuvier, 1824, *H.N. Mamm. 3*, 42: Jungly-Gau, 2, and pl. 418, from Sylhet, Assam, as referring also to the Gayal. But Cuvier's plate and description seem to be more applicable to the Gaur than the Gayal. However, since there is room for doubt, and since *Bos gaurus* Smith, 1827, is the name by which the Gaur is now generally known, it is proposed as a matter of convenience to accept Lydekker's interpretation rather than revive the name *sylhetanus* for the Gaur.

Bos gaurus H. Smith, 1827 Gaur (or Indian "Bison")

Approximate distribution of species: Malay States, Indo-China, Burma, Assam, Nepal, Peninsular India in forest areas, south to Travancore.

Bos gaurus gaurus H. Smith, 1827

1827. *Bos gaurus* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 399. Mainpat, in the Sarguja Tributary States, India, in approximately 23° N., 83° E. (Harper, 1940.)
1827. *Bos gour* Hardwicke, Zool. J. *3:* 231. "District of Ramgurh and tableland of Sirgoojas," India.
1837. *Bibos subhemachalus* Hodgson, J. Asiat. Soc. Bengal, *6:* 499. Saul Forest, Nepal.
1837. *Bos cavifrons* Hodgson, J. Asiat. Soc. Bengal, *6:* 747. Substitute for *subhemachalus*.
1846. *Bos gaur* Sundevall, K. Svenska Vet. Akad. Handl. *1844:* 201. Substitute for *gaurus*.
1851. *Bos asseel* Horsfield, Cat. Mamm. Mus. E. Ind. Co. 181.
Range: Peninsular India to Rajputana, Nepal, Bhutan Duars, Assam.

Bos gaurus readei Lydekker, 1903

1903. *Bos gaurus readei* Lydekker, Zoologist, *7:* 266. Myitkyina, Upper Burma. Range: Burma, Tenasserim, Cochin-China.

Bos banteng Wagner, 1844 Banteng; Tsaine

Approximate distribution of species: Burma, Siam, Indo-China, Malay States, Java and Borneo.

(Bos banteng banteng Wagner, 1844. Extralimital)

1844. *Bos banteng* Wagner, in Schreb. Säugeth. Suppl. *4:* 517. Java.
1845. *Bos sondaicus* Schlegel & Müller, in Temminck, Verh. Nat. Gesch. Ned. Overz. Bezitt. Zool. Mamm. 197. Java.
1846. *Bos banting* Sundevall, K. Svenska Vetensk. Akad. Handl. *1844:* 152. Java.

Bos banteng birmanicus Lydekker, 1898

1898. *Bos sondaicus birmanicus* Lydekker, P.Z.S. 277. Burma.
(?) 1909. *Bos sondaicus porteri* Lydekker, P.Z.S. 669. Siam.
Range: Burma, Siam, Indo-China.

The following names were given by Heude to Indo-Chinese specimens of the subgenus *Bibos*. One of them may be valid if an Indo-Chinese race proves separable, and there is always the chance that one of them may prove to antedate *B. sauveli*, below.

1901. *Gauribos laosiensis* Heude, Mém. H.N. Emp. Chin. *5*, 1: 3. Laos, Tonkin.
1901. *Gauribos brachyrhinus* Heude, *loc. cit.* 4. Pursat, Cambodia.
1901. *Gauribos sylvanus* Heude, *loc. cit.* 4. Mois, Tonkin.
1901. *Gauribos mekongensis* Heude, *loc. cit.* 5. Kratie, Mekon Valley.
1901. *Uribos platyceros* Heude, *loc. cit.* Range dividing Tourane Bay from the rivers of Hué.
1901. *Bubalibos annamiticus* Heude, *loc. cit.* 6. Annam.
1901. *Bos* (?) *leptoceros* Heude, *loc. cit.* 7. Kampot, on coast of Gulf of Siam.

1901. *Bibos discolor* Heude, *loc. cit.* 8. No locality.
1901. *Bibos longicornis* Heude, *loc. cit.* 9. No locality.
1901. *Bibos* (?) *fusicornis* Heude, *loc. cit.* 9. Tonkin.

Bos sauveli Urbain, 1937 Kouprey, or Cambodian Forest Ox

Approximate distribution of species: Cambodia (Indo-China).

Bos sauveli Urbain, 1937

1937. *Bos (Bibos) sauveli* Urbain, Bull. Soc. Zool. France, *62:* 307. Near the village of Tchep, North Cambodia (Urbain, 1939).

On this species, see the monograph by Coolidge, 1941, *Mem. Mus. Comp. Zool. Harvard, 54:* 421–531, where the animal's affinities are fully discussed and illustrated.

F. Edmond Blanc, 1947, A contribution to the knowledge of the Cambodian Wild Ox or Kouprey, *J. Mamm. 28:* 245–248, suggests this species is a hybrid between the Banteng and either the Gaur, Water Buffalo or domestic cattle.

Subgenus *POEPHAGUS* Gray, 1843

Bos grunniens Linnaeus, 1766 Yak

Approximate distribution of species: Tibet, Kansu, Ladak. The domesticated form, variously in the high plateaux and mountains of Central Asia. (Prater states that within Indian limits proper, yak only occur in the Chang Chen Mo Valley, in Ladak. They sometimes stray into the Sutlej Valley and into some of the passes in Eastern Kumaon.)

Bos grunniens grunniens Linnaeus, 1766

1766. *Bos grunniens* Linnaeus, Syst. Nat. 12th ed. *1:* 99. "In Asia boreali." The species was based on the domesticated breed.
1811. *Bos poëphagus* Pallas, Zoogr. Ross. Asiat. *1:* 248, pl. 22. Renaming of *grunniens*.
1833. *Poëphagus gruniens* Gray, List Mamm. B.M. 153.

Bos grunniens mutus Przewalski, 1883 (Wild Yak)

1883. *Poëphagus mutus* Przewalski, Third Journey in C. Asia, 191. Alpine region of the western part of the Nan Shan (approximately 39°20′ N., 95° E.), between the Anembar-Ula on the west and the Humboldt Range on the east, Northern Kansu, China. (Harper, 1940.)

Genus **BISON** H. Smith, 1827

1827. *Bison* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 373. *Bos bison* Linnaeus (Opinion 91 of the International Commission on Zoological Nomenclature), the North American Bison.
1844. *Bonasus* Wagner, Schreb. Säugeth. Suppl. *4:* 515. *Bos (Bison) bison* Smith = *Bos bonasus* Linnaeus.

1 species in the area covered by this list: *Bison bonasus*, page 383

There are two existing species, one of which is American.

Bison bonasus Linnaeus, 1758 European Bison (Wisent)

Approximate distribution of species: Lithuania, and till recently in the Caucasus. For details of the history in both places see *J. Soc. Pres. Fauna Emp.* 1949, pt. 59.

Bison bonasus bonasus Linnaeus, 1758

1758. *Bos bonasus* Linnaeus, Syst. Nat. 10th ed. *1:* 71. Probably Bialowieza, Lithuania (Lydekker, 1913).
1785. *Bos urus* Boddaert, Elench. Anim. *1:* 151.
1827. *Bos bison* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 398. Poland. Not of Linnaeus, 1758.
1827. *Urus nostras* Bojanus, Nova Acta Leop. Carol. *13:* 413. Bialowieza, Lithuania.
1849. *Bison europaeus* Owen, P.Z.S. *1848:* 126. Alternative for *bonasus*.

The Lithuanian Bison became extinct at Bialowieza in 1921, so far as the original free-living stock is concerned, but there were at that time some 45 specimens in zoological gardens and parks in Europe. By 1949 this number had been increased to 119 pure-blooded specimens, including those which have been re-established in a reservation in the Bialowieza forest.

Bison bonasus caucasius Grevé, 1906

1906. *Bison bonasus* var. *caucasia* Grevé, Zool. Beob. *47:* 270. Caucasus Mountains, South-Eastern Russia. Became extinct about 1925.

Genus **BUBALUS** H. Smith, 1827

1775. *Bubalus* Frisch, Natur-System der vierfüss. Thiere, 1 (see page 2).
1827. *Bubalus* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 371. *Bos bubalus* Gmelin = *Bos bubalis* Linnaeus.
1865. *Buffelus* Rütimeyer, Verh. Naturf. Ges. Basel, *4:* 334. *Buffelus indicus* Rütimeyer = *Bos bubalis* Linnaeus.

1 species: *Bubalus bubalis*, page 383

Bubalus bubalis Linnaeus, 1758 Indian Buffalo; Water Buffalo; Arna

Approximate distribution of species: domesticated variously, including to Egypt. In India, Prater states "the grass jungles of the Nepal Terai and the plains of the Ganges and Brahmaputra in Assam; a few herds survive in parts of Orissa, adjoining the Raipur district of the Central Provinces and in the south-eastern districts of the Central Provinces". ? Ceylon (probably feral). Indo-China. A race is named from Borneo.

Bubalus bubalis bubalis Linnaeus, 1758

1758. *Bos bubalis* Linnaeus, Syst. Nat. 10th ed. *1:* 72. Rome, Italy. (Thomas, 1911, P.Z.S. 154. Linnaeus' description was based on a domesticated form.)
1788. *Bos bubalus* Gmelin, Syst. Nat. *1:* 206. Asia.
1792. *Bos arnee* Kerr, Anim. Kingd. 336. "India, north from Bengal," restricted to Kuch Bihar. (Harper, 1940.)
1821. *Bos buffelus* Blumenbach, Handb. Naturges. ed. 10, 119. Asia.

Bubalus bubalis bubalis [*contd.*]

1827. *Bos arni* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 388. Central Bengal.
1841. *Bubalus arna* Hodgson, J. Asiat. Soc. Bengal, *10:* 469.
(?) 1842. *Bubalus arna* var. *macrocerus* Hodgson, J. Asiat. Soc. Bengal, *10:* 912, *nom. nud.* Assam (Lydekker, 1913, Cat. Ung. *1:* 45).
1842. *Bubalus arna* var. *speirocerus* Hodgson, *loc. cit.*, *nom. nud.*
1865. *Buffelus indicus* Rütimeyer, Verh. Naturf. Ges. Basel, *4:* 334. India.
1865. *Buffelus indicus* var. *italica* Rütimeyer, *loc. cit.* Italy (domestic).
(?) 1912. *Bubalus bubalus septentrionalis* Matschie, Deutsche Jäger-Zeitung, *59:* 103. "Kuckri-Muckri," North-Western India.

Bubalus bubalis fulvus Blanford, 1891

1891. *Bos bubalus* var. *fulvus* Blanford, Fauna Brit. India, Mamm. 492. Mishmi Hills, Upper Assam.

Subfamily Hippotraginae

(As understood by Simpson, 1945)

This subfamily, admitted by Simpson (p. 272) to be less surely natural than the other subfamilies he recognized, has something of the appearance of a wastepaper basket. We have our doubts whether it could be defined. The genus *Alcelaphus* has usually been regarded as belonging to a subfamily Alcelaphinae distinct from the Hippotraginae.

Genus **ADDAX** Laurillard, 1841

1815. *Addax* Rafinesque, Analyse de la Nature, 56, *nom. nud.*
1841. *Addax* Laurillard, in d'Orbigny's Dict. Univ. Hist. Nat. *1:* 619. *Antilope suturosa* Otto = *Cerophorus nasomaculata* Blainville.

(For date of publication, see Sherborn & Palmer, 1899, *Ann. Mag. N.H. 3:* 350.)

1 species: *Addax nasomaculatus*, page 384

Addax nasomaculatus Blainville, 1816 Addax

Approximate distribution of species: Senegambia (doubtful) and Rio de Oro, Algerian Sahara and Southern Tunisia south to about 15° N., and east to the Anglo-Egyptian Sudan (Dongola, Darfur, Kordofan). Extinct in Egypt about the year 1900 (Flower, 1932).

Addax nasomaculatus Blainville, 1816

1816. *Cerophorus* (*Gazella*) *nasomaculata* Blainville, Bull. Soc. Philom. Paris, 75 and 78. Probably Senegambia, West Africa.
1825. *Antilope suturosa* Otto, Nova Acta Leop. Carol. *12:* 519. No locality.
1826. *Antilope mytilopes* H. Smith, Griffith's Cuvier Anim. Kingd. *4*, pl. opposite p. 204 (text, 1827). Substitute for *nasomaculata*.

1828. *Antilope gibbosa* Savi, Mem. Sci. Pisa, *1:* 17. Egypt.
(Second reference: Savi, 1832, in Isis (Oken), 500. Sherborn gives Savi, 1828, N. Giorn. Lett. (Pisa), *16*, 38: 89 and 105, but so far as the B.M. copy of this journal is concerned this is an error.)
(*Addax nasomaculatus addax* Cretzschmar, 1826, from Dongola, Anglo-Egyptian Sudan, extralimital to this list, is untenable. "It may be put on record here that both male and female Addax imported from Dongola to the Giza Zoological Gardens grew fine thick winter coats" (Flower, 1932, P.Z.S. 441)).

Genus **ORYX** Blainville, 1816

1816. *Oryx* Blainville, Bull. Soc. Philom. Paris, 75. *Antilope oryx* Pallas = *Capra gazella* Linnaeus (the South African Gemsbok).
1821. *Onyx* Gray, London Med. Repos. *15:* 307. Error for *Oryx*.
1918. *Aegoryx* Pocock, Ann. Mag. N.H. *2:* 221. *Cemas algazel* Oken = *Antilope tao* H. Smith.

Pocock considered that *Oryx tao* differed so much from the other oryxes (there are usually held to be four species: *O. gazella*, the Gemsbok; and *O. beisa*,[1] the Beisa Oryx, are African but extralimital to the Palaearctic region) that he separated it generically as *Aegoryx*.

The grounds for this were the possession of a preorbital gland, which is said to be absent from the other species, a reduced rhinarium and curved horns. The preorbital gland is a thickening of the skin some 30 mm. long and 6 mm. thick. It is a superficial structure having no influence on the skull, i.e. there is no trace of a lachrymal pit. The difference between the rhinarium of *O. tao* and *O. gazella* as figured by Pocock seems slight, and the curved horns of *tao* do not seem to be an important character seeing that the horns in the other species show a slight curvature.

We do not therefore consider that the differences between *tao* and the other species amount to more than specific ones. In fact, if all four species are compared it appears that the only one which might be considered as differing subgenerically (or generically) is *O. leucoryx*, which is a much smaller beast than the others and has a totally different colour pattern so far as the body and legs are concerned. We propose, however, to leave *leucoryx* in the genus *Oryx*, and have only drawn attention to the above as being relevant to an assessment of *Aegoryx*.

2 species in the area covered by this list:

Oryx leucoryx, page 385
Oryx tao, page 386

Oryx leucoryx Pallas, 1777 — Arabian Oryx

Approximate distribution of species: Arabia, Iraq.

[1] Surely *O. beisa* is nothing but a north-eastern representative subspecies of *O. gazella* Linnaeus.

ORYX LEUCORYX Pallas, 1777

1777. *Antilope leucoryx* Pallas, Spicil. Zool. *12:* 17. Arabia.
1816. *Cemas oryx* Oken, Lehrb. Naturgesch. *3*, 2: 734. Island in the Gulf of "Bassora". Unavailable. see p. 3.
1855. *Antilope ensicornis* var. *asiatica* Wagner, Schreb. Säugeth. Suppl. *5:* 437. Renaming of *leucoryx*.
1857. *Oryx beatrix* Gray, P.Z.S. 157. "Shores of Persian Gulf, or of the Red Sea."
1869. *Oryx leucoryx pallasii* Fitzinger, S.B. Akad. Wiss. Wien, *59*, 1: 178. Renaming of *leucoryx*.
(?) 1934. *Oryx leucoryx latipes* Pocock, Ann. Mag. N.H. *14:* 636; 1935, Ann. Mag. N.H. *15:* 464. Wadi Ghudun, approximately 18° N., 53°30′ E., Southern Arabia. We regard this form as of doubtful validity.

Oryx tao H. Smith, 1827 Scimitar-horned Oryx

Approximate distribution of species: the Sahara, from Senegal, Rio de Oro and Northern Nigeria to the Anglo-Egyptian Sudan, north to the Libyan Desert (Shaw, 1933, *J. Soc. Preserv. Fauna Emp.*, London, *20:* 15).

We do not believe this species is divisible into races.

ORYX TAO H. Smith, 1827

1816. *Cemas algazel* Oken, Lehrb. Naturgesch. *3*, 2: 741. Probably Egypt (Buffon), but Western Sahara according to Lydekker. Unavailable, see page 3.
1827. *Antilope tao* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 189. Some days' journey distant from the Bahr-el-Abiad, Anglo-Egyptian Sudan.

For other extralimital synonyms, see G. Allen, 1939, *Checklist African Mammals*, 532.

SUBFAMILY Antilopinae

Genus **ANTILOPE** Pallas, 1766

1766. *Antilope* Pallas, Misc. Zool. 1. *Capra cervicapra* Linnaeus (fixed by Ogilby, 1836).
1780. *Cervicapra* Sparrman, K. Svenska Vetensk. Akad. Handl. *1:* 281. *Antilope cervicapra* Linnaeus.

1 species: *Antilope cervicapra*, page 386

Antilope cervicapra Linnaeus, 1758 Blackbuck

Approximate distribution of species: India, from the Punjab, Kathiawar and Sind, eastwards to Bengal and southwards to Cape Comorin.

Zukowsky (1927 and 1928) in a study based on over a hundred living specimens whose provenance was known, recognized four forms which he referred to as species but which are here treated as races of the same species. He distinguished these forms by the extent of the dark marking, greatest in *hagenbecki* and least in *cervicapra*, by the degree of divergence of the horns, and by the tightness or openness of their spiral, combined with the number of spiral turns and the overall length of the horns. The largest horns and the tightest spiral occur in *rajputanae* and *centralis*, and the shortest with the most open spiral in *cervicapra*.

ANTILOPE CERVICAPRA CERVICAPRA Linnaeus, 1758

1758. *Capra cervicapra* Linnaeus, Syst. Nat. 10th ed. *1:* 69. Inland of Trivandrum, Travancore, India. (Zukowsky, 1927.)
1816. *Cemas strepsiceros* Oken, Lehrb. Naturgesch. *3*, 2: 732. India.
1843. *Cervicapra bezoartica* Gray, List Mamm. B.M. 159. India.

Range: northwards, presumably to the southern limit of the range of *centralis*.

ANTILOPE CERVICAPRA RUPICAPRA Müller, 1776

1776. *Antilope rupicapra* Müller, Natursyst. Suppl. 56. Bengal. (Not preoccupied by *Capra rupicapra* Linnaeus, and supersedes *hagenbecki* Zukowsky.)
1830. *Antilope bilineata* Gray, Illustr. Ind. Zool. *1*, pl. 12. India, probably Bengal.
1927. *Antilope hagenbecki* Zukowsky, in Hagenbeck, Illustr. Tier. u. Menschenwelt, *2:* 125. Bengal.

Range: nearly to Agra, in United Provinces, India.

ANTILOPE CERVICAPRA RAJPUTANAE Zukowsky, 1927

1927. *Antilope rajputanae* Zukowsky, in Hagenbeck, Illustr. Tier. u. Menschenwelt, *2:* 125. Neighbourhood of Bahawalpur, borders of Rajputana and Punjab. Range: Rajputana and Punjab.

ANTILOPE CERVICAPRA CENTRALIS Zukowsky, 1928

1928. *Antilope centralis* Zukowsky, in Hagenbeck, Illustr. Tier. u. Menschenwelt, *3:* 60. Gwalior, India. Range: along the southern limit of the range of *rajputanae* and extending an unknown distance to the south.

Genus **PROCAPRA** Hodgson, 1846

1846. *Procapra* Hodgson, J. Asiat. Soc. Bengal, *15:* 334. *Procapra picticaudata* Hodgson.
1918. *Prodorcas* Pocock, Ann. Mag. N.H. *2:* 130. *Antilope gutturosa* Pallas. Valid as a subgenus.

2 species: *Procapra gutturosa*, page 388
Procapra picticaudata, page 388

This genus contains two aberrant species formerly referred to *Gazella*. Lydekker, 1914, *Cat. Ungulate Mamm. B.M. 3:* 37, considered it was inadvisable to give *Procapra* more than subgeneric rank, but it was adopted by Pocock, and more lately by G. Allen and by Bobrinskii. Pocock restricted it to the type, and erected *Prodorcas* for the species *P. gutturosa*, which differs in glandular details from *picticaudata*, and seems in some respects to connect that species with aberrant species of *Gazella* like *G. subgutturosa*. G. Allen followed Pocock, and in his work on Mongolian and Chinese mammals gave *Prodorcas* generic rank. Simpson and Bobrinskii both seem to ignore it entirely. Probably subgeneric status is the most convenient treatment. *Procapra* differs from *Gazella* cranially very much as does *Capricornis* from *Naemorhedus*, so far as we have had the opportunity to examine skulls. G. Allen also gave a character of the nasals (p. 1209) which would separate *Procapra* from *Gazella*, and this character also holds fairly well when *Procapra* is compared with all Palaearctic species of *Gazella* available in the British Museum.

Subgenus *PROCAPRA* Hodgson, 1846

Procapra picticaudata Hodgson, 1846 Tibetan Gazelle; Goa

Approximate distribution of species: Tibet, Southern Mongolia, Kansu and Szechuan in China, south to Ladak and the hills north of Kumaon and Sikkim. Perhaps also to Chinese Turkestan.

Procapra picticaudata picticaudata Hodgson, 1846

1846. *Procapra picticaudata* Hodgson, J. Asiat. Soc. Bengal, *15:* 334, pl. 2. Hundes district of Tibet. Range: Tibet and immediately adjacent parts of the Indian Himalayas to the south, and Szechuan in the east.

Procapra picticaudata przewalskii Buchner, 1891

1891. *Gazella przewalskii* Büchner, Mélanges Biol. St. Petersb. *13:* 161. Southern Ordos Desert, Mongolia.

1875. *Antilope gutturosa* Przewalski, Mongolia, *1:* 18. Not of Pallas, 1777. Southern Ordos Desert, Mongolia.

1888. *Antilope cuvieri* Przewalski, Fourth Journey in C. Asia, 110. Not of Ogilby, 1841. Southern Ordos Desert, Mongolia.

Range: Southern Mongolia, Northern Kansu, perhaps Chinese Turkestan.

Subgenus *PRODORCAS* Pocock, 1918

Procapra gutturosa Pallas, 1777 Mongolian Gazelle; Zeren

Approximate distribution of species: South-Eastern Transbaikalia, and Chuiskaya Steppe, South-Eastern Siberian Altai; Mongolia, Kansu, possibly (or formerly) Northern Chihli, China.

Procapra gutturosa gutturosa Pallas, 1777

1777. *Antilope gutturosa* Pallas, Spic. Zool. *12*, 46, pl. 2. Transbaikalia. (G. Allen, 1940, Mamm. China & Mongolia, 1211, fixed the type locality as the upper River Onon, Southern Transbaikalia.)

1777. *Antilope orientalis* Erxleben, Syst. Regn. Anim. 288. Renaming of *gutturosa*.

Procapra gutturosa altaica Hollister, 1913

1913. *Procapra altaica* Hollister, Smith. Misc. Coll. *60*, 19: 1. Suok Plains, near south end of Bain-Chagan Pass, Little Altai, Mongolia.

Genus **GAZELLA** Blainville, 1816

1816. *Gazella* Blainville, Bull. Soc. Philom. Paris, 75. *Capra dorcas* Linnaeus. (Opinion 108 of International Commission on Zoological Nomenclature.)

1821. *Dorcas* Gray, London Med. Repos. *15:* 307. *Capra dorcas* Linnaeus.
1844. *Leptoceros* Wagner, Schreb. Säugeth. Suppl. *4:* 422. *Antilope leptoceros* Cuvier. Not of Leach, 1817.
1847. *Tragops* Hodgson, J. Asiat. Soc. Bengal, *16:* 695. *Antilope bennettii* Sykes. Not *Tragops* Wagler, 1830 (a reptile).
1869. *Tragopsis* Fitzinger, S.B. Akad. Wiss. Wien, *59,* 1: 157. *Antilope bennettii* Sykes.
1869. *Eudorcas* Fitzinger, *loc. cit.* 159. *Gazella laevipes* var. *a* Sundevall.
1885. *Nanger* Lataste, Actes Soc. Linn. Bordeaux, *39:* 183. *Antilope* (*Dama*)*mhorr* Bennett. Valid as a subgenus.
1898. *Korin* Sclater & Thomas, Book of Antelopes, *3:* 65. *Gazella rufifrons* Gray.
1907. *Matschiea* Knottnerus-Meyer, Arch. Naturgesch. *73,* 1: 57. *Gazella granti* Brooke, from Tanganyika.

Trachelocele[1] *subgen. nov.* Type species: *Antilope subgutturosa* Güldenstaedt. Valid as a subgenus.

Subgenus *Trachelocele:* Females normally hornless. Males with goitre-like swelling on throat during rutting season.

Subgenus *Gazella:* Females with well-developed horns. No goitre-like swelling on throat in males. Small or medium-sized species; white of rump not intruding much into fawn of body.

Subgenus *Nanger:* Females with well developed horns. Large species; white of rump intruding more or less extensively into fawn of body.

6 species in the area covered by this list:

Gazella dama, page 394
Gazella dorcas, page 391
Gazella gazella, page 392
Gazella leptoceros, page 393
Gazella rufifrons, page 394
Gazella subgutturosa, page 390

This is a difficult genus, with too many standing specific names at the present day. It seems that there are six valid species in the region now under discussion. These species are well figured in Sclater & Thomas, 1898, *Book of Antelopes, 3.* Two of them, differing in colour details as indicated by Lydekker and well figured by Sclater & Thomas, are largely extralimital (African), but both occur in North-West Africa, or did until recently; these are *rufifrons* and *dama*, the latter being one of the species separated subgenerically as *Nanger.*

Of the more truly Palaearctic species, *subgutturosa* stands apart in that the females are hornless, or at most have mere rudiments of horns, whereas the females of the other species have distinct horns, though these are much smaller and more slenderly built than in the males. The species *subgutturosa* also differs from the other species of *Gazella* in that the male develops a goitre-like swelling on the throat in the breeding season. For these reasons we consider that *Gazella subgutturosa* should be separated subgenerically as indicated above.

[1] From τράχηλος, throat; and κήλη, tumour. Gender: feminine.

Then there are the three common species of gazelle which range across North Africa and Arabia: *G. gazella*, *G. dorcas* and *G. leptoceros*.

1) *G. gazella* (the Arabic "Idmi"; "Mountain Gazelle" of North Africa) is a dark form about 70 cm. high at the shoulder, with much red-brown in its coat and no pure white on its face. Its habitat is chiefly in the valleys of the foothills. If our views are correct, that *G. bennetti* should probably be regarded as a race of *G. gazella*, then this gazelle, unlike the next two, ranges beyond Arabia into India.

2) *G. dorcas* (the Arabic "Rhezel" or "Hamar" in North Africa and "Afri" in Sinai and Arabia; Dorcas Gazelle) is the smallest of these three species, about 54–60 cm. at the shoulder, and has a white stripe running down each side of the forehead and the bridge of the nose. It is paler in colour than the Idmi. The habitat is in the open plains.

3) *G. leptoceros* (the Arabic "Rhim"; Slender-horned or Loder's Gazelle) is lighter in colour than the Dorcas and the face has more white on it; the dark parts of the face are so pale that the gazelline face pattern is not well marked. The hooves are longer and narrower than in the other two species. This gazelle is as large as the Idmi, or larger. It is confined to the true sand areas such as the "ergs" of Algeria and the "nufud" of Arabia.

The horns in *gazella* are smaller and stouter than in *leptoceros*, and those of *dorcas* seem to be intermediate. But the more material accumulates the more it becomes apparent that the shape of the horn is unreliable as a diagnostic feature (cf. Lavauden, 1926, *Bull. Soc. N.H. Afr. Nord. 17:* 11, and Morrison-Scott, 1939, *Novit. Zool. 41:* 186).

Subgenus *TRICHELOCELE* Ellerman & Morrison-Scott, 1951

Gazella subgutturosa Güldenstaedt, 1780 Goitred Gazelle; Persian Gazelle

Approximate distribution of species: Transcaucasia, Russian Turkestan, where widely distributed (absent from Fergana Valley), northwards to Tarbagatai Mountains, eastern half of Lake Balkash, basin of the Sarui-Su, thence west to the northern part of Ust-Urt (Bobrinskii). Mongolia, Chinese Turkestan, Northern Tibet. Persia, Euphrates Valley, Afghanistan, Baluchistan.

GAZELLA SUBGUTTUROSA SUBGUTTUROSA Guldenstaedt, 1780

1780. *Antilope subgutturosa* Güldenstaedt, Acta Ac. Sci. Petrop. *1778*, 1: 251. North-Western Persia.
1843. *Antilope dorcas* var. *persica* Gray, List Mamm. B.M. 160.
1900. *Gazella subgutturosa typica* Lydekker, Great & Small Game India, 180.

Range: Afghanistan, Euphrates Valley, Persia and Russian Turkestan.

Gazella subgutturosa yarkandensis Blanford, 1875. Saikik Gazelle

1875. *Gazella subgutturosa* var. *yarkandensis* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 112. Plains of Yarkand, Chinese Turkestan.

1910. *Gazella yarcandensis* Lydekker, Nature, *83:* 202.

Gazella subgutturosa hillieriana Heude, 1894

1894. *Gazella hillieriana* Heude, Mém. H.N. Emp. Chin. *2:* 245, pl. 36. ? Gobi Desert, Eastern Mongolia.

1894. *Gazella mongolica* Heude, *loc. cit.* pl. 37.

Range: Mongolia. Synonyms of the typical race according to Lydekker; G. Allen (1940) revives the name for the Mongolian form.

Gazella subgutturosa sairensis Lydekker, 1900

1900. *Gazella subgutturosa sairensis* Lydekker, Great & Small Game of India, 184. Saiar Mountains, Zungaria.

Gazella subgutturosa seistanica Lydekker, 1910

1910. *Gazella seistanica* Lydekker, Nature, *83:* 202. Seistan, Eastern Persia. Range: to Baluchistan.

Gazella subgutturosa reginae Adlerberg, 1931

1931. *Gazella subgutturosa reginae* Adlerberg, C.R. Acad. Sci. U.R.S.S. 327. North-Western Tsaidam, Northern Tibet.

Subgenus *GAZELLA* Blainville, 1816

Gazella dorcas Linnaeus, 1758 Dorcas Gazelle

"Rhezel" (North Africa); "Afri" (Sinai and Arabia)

Approximate distribution of species: Northern Africa, from Rio de Oro, Morocco, Algeria, Tunisia, Libya, Egypt, east to Sinai, Palestine, Syria, Arabia, and south to the Sudan, Abyssinia, Lake Chad region.

Gazella dorcas dorcas Linnaeus, 1758

1758. *Capra dorcas* Linnaeus, Syst. Nat. 10th ed. *1:* 69. Lower Egypt (Blaine, 1913, Ann. Mag. N.H. *11:* 292).

1766. *Antilope kevella* Pallas, Misc. Zool. 7. Based on "Le Kevel" of Buffon, 1764.

1766. *Antilope corinna* Pallas, *loc. cit.* Based on "La Corinne" of Buffon, 1764.

1816. *Cemas maculata* Oken, Lehrb. Naturgesch. *3:* 738. Senegal.

1869. *Gazella dorcas sundevalli* Fitzinger, S.B. Akad. Wiss. Wien, *59*, 1: 159. North Africa. (Naming of *G. dorcas* var. γ Sundevall.)

Range: Rio de Oro to Egypt and the Sudan.

Gazella dorcas neglecta Lavauden, 1926

1926. *Gazella dorcas neglecta* Lavauden, Bull. Soc. H.N. Afrique du Nord, *17:* 16. Text figs. 2, 3 and 4. Plateau de Tadmeit, Central Algerian Sahara.

GAZELLA DORCAS MASSAESYLA Cabrera, 1928

1928. *Gazella dorcas massaesyla* Cabrera, J. Mammal. *9:* 242. High plateaux of the Rif, Morocco, south of Spanish-French frontier.

1929. *Gazella dorcas cabrerai* Joleaud, Bull. Soc. Zool. France, *54:* 440. Substitute for *massaesyla* thought to be preoccupied by *massaesilia* Pomel, 1894, Carte Géol. de l'Algérie, Les Antilopes, 21.

GAZELLA DORCAS SAUDIYA Carruthers & Schwarz, 1935

1935. *Gazella gazella saudiya* Carruthers & Schwarz, P.Z.S. 155. Dhalm, about 150 miles north-east of Mecca, Arabia. Range: Sinai, Arabia, Palestine.

Gazella gazella Pallas, 1766 — Mountain Gazelle (North Africa) "Idmi" (North Africa and Arabia); Chinkara (India)

Approximate distribution of species: Rio de Oro, Morocco, Algeria, Western Tunis; Sinai and Arabia, south to Aden, Eastern Persia, Palestine, Syria; Baluchistan, Punjab, Sind, Nepal, United Provinces, Rajputana, Cutch, Kathiawar, to a little south of the Krishna (Kistna) River (which forms the border between Hyderabad and Madras), India.

GAZELLA GAZELLA GAZELLA Pallas, 1766

1766. *Antilope gazella* Pallas, Misc. Zool. 7. Syria.

1904. *Gazella merrilli* Thomas, Abstr. P.Z.S. No. 12, 19; 1905, P.Z.S. *1904*, 2: 347. Hizmeh, north of Jerusalem, Palestine.

Range: Syria and Palestine.

GAZELLA GAZELLA ARABICA Lichtenstein, 1827

1827. *Antilope arabica* Lichtenstein, Darstellung Säugeth. pl. 6. Farsan Island, on Arabian coast of Red Sea. (Some authors have "Sinai", on the ground that Lichtenstein's description was based on Ehrenberg's manuscript, and Ehrenberg's plate, published in 1828, is marked "Sinai".)

1827. *Antilope cora* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 216. Persian Gulf.

1874. *Gazella muscatensis* Brooke, P.Z.S. 142, pl. 22. Muscat, Oman, Eastern Arabia.

1906. *Gazella arabica erlangeri* Neumann, S.B. Ges. Naturf. Fr. Berlin, 244. Lahej, near Aden, South-Western Arabia.

1906. *Gazella arabica rueppelli* Neumann, *loc. cit.* Sinai Peninsula.

1910. *Gazella arabica typica* Ward, Rec. Big Game, ed. 6, 251.

1927. *Gazella arabica hanishi* Dollman, Abstr. P.Z.S. No. 291: 1; 1928, P.Z.S. *1927:* 1005. Great Hanish Island, Red Sea.

GAZELLA GAZELLA BENNETTI Sykes, 1831

1831. *Antilope bennettii* Sykes, P.Z.S. *1830–31:* 104. Deccan, India.

1839. *Antilope arabica* Elliot, Madras J. Lit. *10:* 223. Not of Lichtenstein, 1827.

1842. *Gazella christii* Blyth, J. Asiat. Soc. Bengal, *11:* 452. Thar (or Indian Desert), India.

1843. *Antilope hazenna* I. Geoffroy, in Jacquemont, Voy. Inde, *4:* 74. Malwa, Central India.

?) 1873. *Gazella fuscifrons* Blanford, P.Z.S. 317. Jalk, on fringe of Seistan Desert, Eastern Persia.

1908. *Gazella yarkandensis kennioni* Lydekker, Field, *111:* 499. Kain, Afghan frontier of Persia.

1911. *Gazella hayi* Lydekker, P.Z.S. 961. "As the result of an unfortunate accident, namely the transposition of the registration labels of two gazelles received simultaneously at the British Museum, I find that I have described and figured a specimen of the Seistan *Gazella fuscifrons* as a new African species under the name *G. hayi*" (Lydekker, 1912, P.Z.S. 911).

Range: Eastern Persia, and Indian range of the species above.

Gazella gazella cuvieri Ogilby, 1841

1841. *Antilope cuvieri* Ogilby, P.Z.S. *1840:* 35. Mogador, Morocco.

1804. *Gazella corinna* Lacepède & Cuvier, Ménag. Mus. H.N. Paris, plate and text. Not of Pallas, 1766. Constantine, Algeria.

1850. *Gazella vera* Gray, Gleanings Menag. Knowsley Hall, pl. 3.

1853. *Gazella cineraceus* Temminck, Esquis. Zool. sur la Côte de Guiné, 193. No locality.

1860. *Gazella kevella* Tristram, The Great Sahara, 387. Not of Pallas, 1766. Atlas Mountains, south of Teniet el Haad, West of Algeria.

Range: Mountains of Morocco, Algeria, Tunis.

Gazella leptoceros F. Cuvier, 1842 Slender-horned Gazelle; Loder's Gazelle "Rhim" (North Africa and Arabia); "Gazal abiad" (Egypt)

Approximate distribution of species: Algeria, Libya, Egypt, the Sudan and Arabia.

Gazella leptoceros leptoceros F. Cuvier, 1842

1842. *Antilope leptoceros* Cuvier, in Geoffroy & Cuvier, Hist. Nat. Mamm. *4*: livraison 72. *Antilope à longues cornes*, 2, and pls. 373, 374. "Sennaar" (probably the desert between Giza and Wadi Natron, Lower Egypt, as the type specimen was brought to Paris by James Burton, *circa* 1833. Flower, 1932).

1869. *Leptoceros abu harab* Fitzinger, S.B. Akad. Wiss. Wien, *59*, 1: 160. Libyan Desert.

1869. *Leptoceros cuvieri* Fitzinger, *loc. cit.* Renaming of *leptoceros*. *Nec* Ogilby, 1841.

(?) 1894. *Gazella loderi* Thomas, Ann. Mag. N.H. *13:* 452. Sand dunes of Oued Souf, 100 miles south of Biskra, Northern Algeria. Often regarded as a race of *leptoceros*, but "points of difference from typical race not known" (Lydekker).

1898. *Gazella leptoceros typica* Sclater & Thomas, Book of Antelopes, *3:* 149.

Gazella leptoceros marica Thomas, 1897

1897. *Gazella marica* Thomas, Ann. Mag. N.H. *19:* 162. Nejd, Central Arabia. Range: sand areas of Arabia.

Thomas said that *marica* agreed with *leptoceros* in the almost complete absence of gazelline face markings and general pale colour, but that it was smaller and had shorter and differently shaped horns. But Thomas had only four specimens and the only adult male had the horns sawn off. Other reasons for regarding *marica* as a race of *leptoceros* is that its habitat is restricted to sandy dunes in the same way as the latter, and its Arabic name is the same—"Rhim". Thomas's chief point of difference, that of

the small size of *marica*, is belied by the fact that the Arabs of Arabia regard "Rhim" as the largest of their three gazelles.

Gazella rufifrons Gray, 1846 Korin or Red-fronted Gazelle

Approximate distribution of species: Senegal, Gambia, Northern Nigeria, region of Lake Chad, the Sudan. Possibly, not certainly, still existing in Algeria. Heim de Balsac, 1936, *Bull. Biol. France et Belgique, Suppl. 21:* 88, regards *rufina*, of which only three or four specimens are known, as a species distinct from *rufifrons*.

(GAZELLA RUFIFRONS RUFIFRONS Gray, 1846. Extralimital)

1846. *Gazella rufifrons* Gray, Ann. Mag. N.H. *18:* 214. Senegal.

GAZELLA (?) RUFIFRONS RUFINA Thomas, 1894

1894. *Gazella rufina* Thomas, P.Z.S. 467. "Probably the interior of Algeria"; type purchased at Algiers. Now believed to be extinct, but there may be a herd in the Chelif district, between Oran and Algiers (Heim de Balsac, 1936).

GAZELLA (?) RUFIFRONS PALLARYI Pomel, 1895

1895. *Antilope (Dorcas) pallaryi* Pomel, Paléontologie-Les Antilopes Pallas, 9. Type and only specimen obtained from a merchant in Oran, Algeria.

Subgenus *NANGER* Lataste, 1885

Of the three species referred by Lydekker and others to this subgenus, only one, the earliest named, enters the present region.

Gazella dama Pallas, 1766 Dama Gazelle

Approximate distribution of species: Senegal, Lake Chad district, the Sudan, northwards to Morocco and Rio de Oro.

(GAZELLA DAMA DAMA Pallas, 1766. Extralimital)

1766. *Antilope dama* Pallas, Misc. Zool. 5. Probably the vicinity of Lake Chad, French Equatorial Africa.[1]

GAZELLA DAMA MHORR Bennett, 1833

1833. *Antilope (Dama) mhorr* Bennett, P.Z.S. 2. Wednun, near Tafilat, Mogador, Morocco.

1846. *Gazella mohr* Gray, Ann. Mag. N.H. *18:* 231. Emendation of *mhorr*.

GAZELLA DAMA LOZANOI Morales Agacino, 1934

1934. *Gazella dama lozanoi* Morales Agacino, Bol. Soc. Esp. H.N. *34:* 454, pl. 35, fig. 1. Villa Cisneros, Rio de Oro.

[1] 1847. *Antilope dama* var. *occidentalis* Sundevall, K. Svenska Vetensk. Akad. Handl. *1845:* 266. Currently listed as a synonym of *G. d. dama*. Sundevall gives "var. *occidentalis*" twice under *Antilope dama*, once with locality "Senaar, Egyptus", and a second time with "Senegal, Marocco". It may well be that the first "var. *occidentalis*" is a misprint for "*orientalis*", but he does not say so in the list of corrigenda given on p. 324.

Subfamily Caprinae

As understood by Simpson (1945) this contains four tribes, typified by *Saiga* (with *Pantholops*); *Budorcas* (allied to the Nearctic *Ovibos* in Simpson's list); *Rupicapra*, with immediate allies; and *Capra*, with immediate allies. These four groups are usually given subfamily rank. Sometimes *Saiga* and *Pantholops* are considered to be more closely allied to the Antilopinae. The very remarkable structure of the skull in the region of the nasal aperture in *Saiga* is well figured in Bobrinskii (1944).

Genus **PANTHOLOPS** Hodgson, 1834

1834. *Pantholops* Hodgson, P.Z.S. 81. *Antelope hodgsonii* Abel.

1 species: *Pantholops hodgsoni*, page 395

Pantholops hodgsoni Abel, 1826 — Chiru; Tibetan Antelope

Approximate distribution of species: Tibet; Ladak. "The only spot in Indian territory in which (Chiru) are found is the Chang Chen Mo Valley (Northern Ladak) into which they cross from Tibet by way of the Lanak La Pass, at the head of the valley" (Prater).

Pantholops hodgsoni Abel, 1826

1826. *Antelope hodgsonii* Abel, Calcutta Govt. Gazette, 1826. (*N.V.*): Phil. Mag. *68:* 234. Tingri Maidan, Arrun Valley, Kooti Pass, Tibet.
1827. *Antilope kemas* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 196. Central Asia.
1827. *Antilope chiru* Lesson, Man. Mamm. 371. Nepal.

Genus **SAIGA** Gray, 1843

1843. *Saiga* Gray, List Mamm. B.M., xxvi. *Capra tatarica* Linnaeus.
1843. *Siaga* Gray, List Mamm. B.M. 160.
1844. *Colus* Wagner, Schreb. Säugeth. Suppl. *4:* 419. *Antilope saiga* Pallas = *Capra tatarica* Linnaeus.

1 species: *Saiga tatarica*, page 395

Saiga tatarica Linnaeus, 1766 — Saiga

Approximate distribution of species: "Nowadays the saiga only remains in the area stretching from the right-bank steppe of the Lower Volga across Kazakstan to Zungaria, inclusive. Even in that area however its distribution within the U.S.S.R. is not continuous, but divided into separate districts: (1) Kalmuikia; (2) the Volga-Ural steppes; (3) the steppes between the River Emba and lower River Ural;

(4) Buzachi Peninsula; (5) Northern Ust-Urt? (it apparently fails to occur in the more southern parts of the Ust-Urt and only in the winter occasionally visits the Kara-bougaz area); (6) east of the Amu-Darya delta; (7) Barsa-Kalmes Island, in the Sea of Aral; (8) the lower Syr-Darya area, Karsakpai area, the lower and middle Sarui-Su and the Godolnara steppe Betpakdala); (9) the steppes between Lake Balkash and the Rivers Ili and Karatal; (10) the Ala-Kul basin; (11) the north of Zaisan basin. Rare everywhere in the U.S.S.R. Hunting of it everywhere forbidden" (Bobrinskii, 1944). In addition, a form has recently been named from Mongolia. This differs from *S. tatarica* in smaller size, detailed structure of horns, and some cranial details. From descriptions it might equally well be regarded as a species or as a very distinct race of *tatarica*.

The name *Ibex imberbis* Gmelin, 1760, *Nov. Comment. Acad. Sci. Petrop. 5:* 345 (and 1761, *7:* Summarium, 39), Tara, on Irtish River, Siberia, has been used for the Saiga but is unavailable, since in this particular work Gmelin is not consistently binominal.

Saiga tatarica tatarica Linnaeus, 1766

1760. *Ibex imberbis* Gmelin, Nov. Comment. Acad. Sci. Petrop. *5:* 345 (and 1761, *7:* Summarium, 39). Tara, on River Irtish, Siberia. (Unavailable.)
1766. *Capra tatarica* Linnaeus, Syst. Nat. 12th ed. *1:* 97. Ural Steppes, Russia.
1766. *Antilope saiga* Pallas, Misc. Zool. 6. Renaming of *Ibex imberbis* Gmelin.
1767. *Antilope scythica* Pallas, Spic. Zool. *1:* 9. Renaming of *imberbis*.
1768. *Capra saiga* Forster, Philos. Trans. *57:* 344. Volga Basin, Russia.
1816. *Cemas colus* Oken, Lehrb. Naturgesch. *3*, 2: 736. Renaming of *Ibex imberbis*.

Range: Russian and Siberian range of species.

Saiga (?) tatarica mongolica Bannikov, 1946

1946. *Saiga mongolica* Bannikov, C.R. Acad. Sci. U.R.S.S. *51:* 401. One hundred and fifty kilometres west of Bayan Somon, Shargin Gobi, Dukhmen-tala, Western Mongolia.

Genus **BUDORCAS** Hodgson, 1850

1850. *Budorcas* Hodgson, J. Asiat. Soc. Bengal, *19:* 65. *Budorcas taxicolor* Hodgson.

1 species: *Budorcas taxicolor*, page 396

Budorcas taxicolor Hodgson, 1850 Takin

Approximate distribution of species: Mishmi, Bhutan, and possibly Northern Burma; states of Szechuan and Shensi (possibly Yunnan on Burma border) and probably into Southern Kansu, China.

By some authors this genus is placed in the Rupicaprine division from which it is apparently distinct. As already noted, Simpson allies it to *Ovibos*.

Budorcas taxicolor taxicolor Hodgson, 1850

1850. *Budorcas taxicolor* Hodgson, J. Asiat. Soc. Bengal, *19:* 65, pls. 1–3. Mishmi Hills (north of Assam).

Budorcas taxicolor tibetana Milne-Edwards, 1874

1874. *Budorcas taxicola* (sic) var. *tibetana* Milne-Edwards, Rech. Mamm. 367, pl. 74. Moupin, Szechuan, China.
1907. *Budorcas taxicolor sinensis* Lydekker in Rowland Ward, Rec. Big Game, ed. 5, 350. Substitute for *tibetana.*
1908. *Budorcas taxicolor mitchelli* Lydekker, Field, *111:* 790. Tatsienlu, Szechuan, China.

Budorcas taxicolor whitei Lydekker, 1907

1907. *Budorcas taxicolor whitei* Lydekker, Field, *110:* 887. Bhutan. ? Synonym of the typical race.

Budorcas taxicolor bedfordi Thomas, 1911

1911. *Budorcas bedfordi* Thomas, Abstr. P.Z.S. 27; P.Z.S. 693, pl. 29. Taipai Shan, 10,000 ft., Shensi, China.

Genus **RUPICAPRA** Blainville, 1816

1775. *Rupicapra* Frisch, Natur-System vierfüss. Thiere, 2.
1816. *Rupicapra* Blainville, Bull. Soc. Philom. Paris, 75. *Capra rupicapra* Linnaeus (Opinion 91 of the International Commission on Zoological Nomenclature).
1840. *Capella* Keyserling & Blasius, Wirbelth. Europas, iv. and 28. *Capra rupicapra* Linnaeus.
1841. *Cemas* Gloger, Naturgeschichte, *1:* 153. *Capra rupicapra* Linnaeus. Not of Oken, 1816.

1 species: *Rupicapra rupicapra*, page 397

Rupicapra is the first generic name for the Rupicaprine division which was made a tribe of the Caprinae by Simpson, but is often granted subfamily rank. It is in many ways more specialized than *Naemorhedus* or *Capricornis*, the other Palaearctic Rupicaprines. For characters of these genera, see Lydekker, 1913, *Cat. Ungulate Mamm. B.M. 1:* 179.

Rupicapra rupicapra Linnaeus, 1758 Chamois

Approximate distribution of species: Cantabrian Mountains (Spain), Pyrenees, Alps of France, Switzerland, Italy, Bavaria and Austria, Apennines (Abruzzi region, Italy), Carpathian chain in Czechoslovakia, Southern Poland and Rumania, the higher mountains of Yugoslavia, Albania, Bulgaria and Greece, the Caucasus and the eastern half of Asia Minor.

(See the important monograph, Couturier, 1938, *Le Chamois:* Grenoble.)

RUPICAPRA RUPICAPRA RUPICAPRA Linnaeus, 1758

1758. *Capra rupicapra* Linnaeus, Syst. Nat. 10th ed. *1:* 68. Switzerland.
1830. *Rupicapra hamulicornis* Burnett, Quart. J. Sci. Lit. Art. *1829, 2:* 353. No locality.
1843. *Rupicapra tragus* Gray, List Mamm. B.M. 167. Renaming of *rupicapra.*
1845. *Rupicapra capella* Bonaparte, Atti Sci. Ital. Milano, *6:* 337. Renaming of *rupicapra.*
1847. *Capra rupicapra sylvatica* Sundevall, K. Svenska Vetensk. Akad. Handl. *1845:* 284. Below the tree-line, Swiss and Tyrolean Alps.
1847. *Capra rupicapra alpina* Sundevall, *loc. cit.* 285. Higher regions of Swiss Alps. Not of Girtanner, 1786.
1871. *Rupicapra europea* Cornalia, Faun. Ital. *1:* 53. Substitute for *rupicapra.*
1897. *Rupicapra dorcas* Schulze, Helios, Berlin, *14:* 81. Substitute for *rupicapra.*
(?) 1912. *Rupicapra faesula* Miller, Proc. Biol. Soc. Washington, *25:* 131. Passo Mandrioli, Savio Valley, Etruscan Apennines, Italy. (Chamois do not occur in this part of Italy, and are not known to have occurred there in recent times. It would appear, therefore, that there is some error in the provenance of the two specimens on which Miller based this name.)

Range: Alps, Apennines, Tyrol, Carpathians, Transylvania.

RUPICAPRA RUPICAPRA PYRENAICA Bonaparte, 1845. Isard

1845. *Rupicapra pyrenaica* Bonaparte, Atti. Sci. Ital. Milano, *6:* 337. Pyrenees.

RUPICAPRA RUPICAPRA ORNATA Neumann, 1899

1899. *Rupicapra ornata* Neumann, Ann. Mus. Stor. Nat. Genova, *20:* 347. Barrea, near Alfedena, Province of Aquila, in the Abruzzi Apennines, Italy.

RUPICAPRA RUPICAPRA ASIATICA Lydekker, 1908

1908. *Rupicapra tragus asiatica* Lydekker, Field, *112:* 104. Trebizond, Asia Minor.

RUPICAPRA RUPICAPRA CAUCASICA Lydekker, 1910

1910. *Rupicapra tragus caucasica* Lydekker in Ward's Rec. Big Game, ed. 6, 338. Caucasus Mountains, South-Eastern Russia.

RUPICAPRA RUPICAPRA PARVA Cabrera, 1911

1911. *Rupicapra rupicapra parva* Cabrera, P.Z.S. *1910:* 999. Picos de Europa, Santander Province, Spain.

RUPICAPRA RUPICAPRA BALCANICA Bolkay, 1925

1925. *Rupicapra rupicapra balcanica* Bolkay, Novit. Mus. Sarajevo, No. 1: 15. Bosnia, Yugoslavia. (Exact locality of type unknown.)
1929. *Rupicapra rupicapra olympica* Koller, Zool. Anz. *83:* 46. Mt. Olympus, Greece.

RUPICAPRA RUPICAPRA CARTUSIANA Couturier, 1938

1938. *Rupicapra rupicapra cartusiana* Couturier, Le Chamois, 348. Massif de la Chartreuse, Dauphiné, France.

RUPICAPRA RUPICAPRA CARPATICA Couturier, 1938

1938. *Rupicapra rupicapra carpatica* Couturier, Le Chamois, 369. Ratezat, Transylvanian Alps, Rumania.

Genus **CAPRICORNIS** Ogilby, 1837

1837. *Capricornis* Ogilby, P.Z.S. *1836:* 139. *Antilope thar* Hodgson.
1862. *Capricornus* Gray, Ann. Mag. N.H. *10:* 320. For *Capricornis*.
1898. *Capricornulus* Heude, Mém. H.N. Emp. Chin. *4:* 13. *Antilope crispa* Temminck. Valid as a subgenus.
1898. *Nemotragus* Heude, Mém. H.N. Emp. Chin. *4:* 13. *Capricornis erythropygius* Heude = *Capricornis* (*Antilope*) *milne-edwardsii* David.
1898. *Lithotragus* Heude, Mém. H.N. Emp. Chin. *4:* 13. *Capricornis maritimus* Heude.
1898. *Austritragus* Heude, Mém. H.N. Emp. Chin. *4:* 14. *Antilope sumatraensis* Bechstein.

2 species: *Capricornis crispus*, page 401
Capricornis sumatraensis, page 399

C. crispus was separated subgenerically by Lydekker, and Pocock (1918) gave it generic rank. He stated that it was in some respects intermediate between *Capricornis* and *Nemorhaedus* and that these genera differed from each other less than was formerly supposed, small face glands being present in *Nemorhaedus*. An alternative would be to refer all three to one genus, in which case *Nemorhaedus* would take priority. However, in skulls we have examined of the three species now under discussion, the lachrymal pit seems very well marked in *Capricornis*, absent in *Nemorhaedus*, as pointed out by Glover Allen in his key to the Bovidae of China (1940, 1209). So as the two are thus clearly distinguishable cranially, and universally recognized, we retain *Capricornis*.

Subgenus *CAPRICORNIS* Ogilby, 1837

Capricornis sumatraensis Bechstein, 1799 Serow

Approximate distribution of species: Southern Kansu, Szechuan, Yunnan and eastwards to Fukien in Southern China. Burma, Assam, Nepal westwards to Punjab and Kashmir. Indo-China, Lower Siam, Malay States, Sumatra.

(Capricornis sumatraensis sumatraensis Bechstein, 1799. Extralimital)

1799. *Antilope sumatraensis* Bechstein, Übers. vierf. Thiere, *1:* 98. Sumatra.

Capricornis sumatraensis thar Hodgson, 1831

1831. *Antilope thar* Hodgson, Gleanings Science, *3:* 324. Nepal Himalaya.
1832. *Antilope bubalina* Hodgson, P.Z.S. 12. Nepal.
1842. *Nemorhaedus* vel *Kemas proclivus* vel *thar* Hodgson, J. Asiat. Soc. Bengal, *10:* 913. *Nom. nud.*

Range: Lahul, Kumaon, Nepal, Sikkim.

Capricornis sumatraensis rubidus Blyth, 1863

1863. *Capricornis rubida* Blyth, Cat. Mamm. Mus. Asiat. Soc. 174. Arakan Hills, Burma.

CAPRICORNIS SUMATRAENSIS MILNEEDWARDSI David, 1869

1869. *Capricornis* (*Antilope*) *milne-edwardsii* David, Nouv. Arch. Mus. H.N. Paris, *5*, Bull.: 10. Moupin, Szechuan, China.
1871. *Nemorhedus edwardsii* David, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 90.
1894. *Capricornis platyrhinus*, *C. cornutus*, *C. erythropygius* (or *erytropygius*), *C. microdontus*, *C. ungulosus*, *C. nasutus*, *C. vidianus*, *C. fargesianus*, *C. brachyrhinus*, *C. pugnax*, *C. longicornis*, *C. chrysochaetes* Heude, Mém. H.N. Emp. Chin. *2:* 232, 233, based on specimens from Moupin, Szechuan, and other parts of China.
1898. *Capricornis microdonticus* Heude, Mém. H.N. Emp. Chin. *4:* 1. Moupin, Szechuan (for *microdontus*).
1921. *Capricornis osborni* Andrews, Amer. Mus. Nov. 6: 1. Hui-yao, 20 miles from Tengueh, Yunnan, China.

Range: Kansu to Yunnan, Burma, Tenasserim.

CAPRICORNIS SUMATRAENSIS ARGYROCHAETES Heude, 1888

1888. *Capricornis argyrochaetes* Heude, Mém. H.N. Emp. Chin. *2:* 4 (footnote). Subprefecture of Tchou-ki, Province of Chekiang, South-Eastern China.
1894. *Capricornis maxillaris* Heude, Mém. H.N. Emp. Chin. *2:* 229. Chaohing, Chekiang, China.
1899. *Capricornis collasinus* Heude, Mém. H.N. Emp. Chin. *4:* 211. Kwantung, China.

Range: South-Eastern China.

CAPRICORNIS SUMATRAENSIS MARITIMUS Heude, 1888

1888. *Capricornis maritimus* Heude, Mém. H.N. Emp. Chin. *2:* 4 (footnote). Baie d'Along, Tonkin, Indo-China. Listed as valid by Osgood, 1932. Other names given to Indo-Chinese serows by Heude are:
1894. *Capricornis rocherianus* Heude, Mém. H.N. Emp. Chin. *2:* 225. Baie d'Along, Tonkin, Indo-China.
1894. *Capricornis benetianus* Heude, *loc. cit.* 227. Same locality.
1897. *Capricornis marcolinus* Heude, *loc. cit. 3:* 151. Tonkin.
1898. *Capricornis berthetianus* Heude, *loc. cit. 4:* 8. Tonkin.
1899. *Capricornis gendrelianus* Heude, *loc. cit. 4:* 210. Tonkin.
1913. *Capricornis venetianus* Lydekker, Cat. Ungulate Mamm. B.M. *1:* 202 (error for *benetianus*).

CAPRICORNIS SUMATRAENSIS HUMEI Pocock, 1908

1908. *Capricornis sumatraensis humei* Pocock, P.Z.S. 178. Kashmir.

CAPRICORNIS SUMATRAENSIS RODONI Pocock, 1908

1908. *Capricornis sumatraensis rodoni* Pocock, P.Z.S. 180. Chamba, Punjab.

CAPRICORNIS SUMATRAENSIS JAMRACHI Pocock, 1908

1908. *Capricornis sumatraensis jamrachi* Pocock, P.Z.S. 183. Kalimpong, near Darjeeling, Northern Bengal.

CAPRICORNIS SUMATRAENSIS ANNECTENS Kloss, 1919

1919. *Capricornis sumatraensis annectens* Kloss, J.N.H. Soc. Siam, *3:* 391. Koh Lak, South-Western Siam.

Capricornis sumatraensis montinus G. Allen, 1930

1930. *Capricornis sumatraensis montinus* G. Allen, Amer. Mus. Nov. 410, 5. Likiang Range, Snow Mountains, Yunnan, China.

Subgenus *CAPRICORNULUS* Heude, 1898

Capricornis crispus Temminck, 1845 Japanese Serow

Approximate distribution of species: Hondo, Shikoku and Kiushiu, Japan; and as here understood, Formosa.

Capricornis crispus crispus Temminck, 1845

1845. *Antilope crispa* Temminck, Fauna Japon, Mamm. 55, pls. 18, 19. Nippon (Hondo), Japan.

1894. *Capricornis pryerianus* Heude, Mém. H.N. Emp. Chin. *2:* 230. Founded on a skull obtained in Tokyo, Japan, by Mr. Pryer.

1898. *Capricornulus saxicola* Heude, Mém. H.N. Emp. Chin. *4:* 13. Nippon (Hondo), Japan.

1901. *Naemorhedus crispus pryeri* Lydekker, Great & Small Game of Europe, etc. 175.

Capricornis (?)crispus swinhoei Gray, 1862

1862. *Capricornus swinhoei* Gray, Ann. Mag. N.H. *10:* 320. Formosa.

Genus **NEMORHAEDUS** H. Smith, 1827

1827. *Naemorhedus* H. Smith, Griffith's Cuvier Anim. Kingd. *5:* 352. *Antilope goral* Hardwicke.

1836. *Naemorhaedus* Jardine, Nat. Libr. *12:* 97. Emendation.

1837. *Kemas* Ogilby, P.Z.S. *1836:* 138.

1842. *Nemorhedus* Agassiz, Nomen. Zool. Index Univ., Mamm. 22. Emendation.

1843. *Nemorrhedus* Gray, List Mamm. B.M. 166.

1844. *Caprina* Wagner, Schreb. Säugeth. Suppl. *4:* xi, 457. Not of d'Orbigny, 1822.

1871. *Urotragus* Gray, Ann. Mag. N.H. *8:* 372. *Antilope caudata* Milne-Edwards.

1884. *Nemorhaedus* Flower & Garson, Cat. Osteol. Mus. R. Coll. Surg. *2:* 254. Substitute for *Naemorhedus* H. Smith.

1 species: *Naemorhedus goral*, page 401

Nemorhaedus goral Hardwicke, 1825 Goral

Approximate distribution of species: extreme South-Eastern Siberia (Sikoto-Alin Mountains), Manchuria and Korea, all the larger states of China (possibly excepting Kansu); Tibet. Burma, Assam, Nepal, Punjab to Kashmir.

Nemorhaedus goral goral Hardwicke, 1825

1825. *Antilope goral* Hardwicke, Trans. Linn. Soc. London, *14:* 518. Nepal Himalaya.

(?) 1827. *Antilope duvaucelii* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 279. Locality unknown.

1905. *Urotragus bedfordi* Lydekker, Zoologist, *9:* 83. Probably Dharmsala, Himalayas (Lydekker, 1913).

Range: apparently Kashmir, Punjab to Kumaon.

NEMORHAEDUS GORAL CAUDATUS Milne-Edwards, 1867

1867. *Antilope caudata* Milne-Edwards, Ann. Sci. Nat. Zool. *7:* 377. Bureja Mountains, Amurland.
1862. *Antilope* (*Caprina*) *crispa* Radde, Reise Ost. Sibirien, *1:* 262. Not of Temminck, 1845. Bureja Mountains, Amurland.
1894. *Kemas galeanus* Heude, Mém. H.N. Emp. Chin. *2:* 243. Yu Ho Mountains, Southern Shensi, China.
1894. *Kemas vidianus* Heude, *loc. cit.*, same locality.

Range includes Chihli and Shansi, Northern China (? Extinct in Amurland.)

NEMORHAEDUS GORAL GRISEUS Milne-Edwards, 1872

1872. *Nemorhedus griseus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 93. Moupin, Szechuan, China.
1874. *Antilope* (*Naemorhedus*) *cinerea* Milne-Edwards, Rech. Mamm. 362, pl. 70. Moupin, Szechuan, China.
1894. *Kemas niger* Heude, Mém. H.N. Emp. Chin. *2:* 241, Chenkouting, Szechuan.
1894. *Kemas fargesianus* Heude, *loc. cit.*, same locality.
1894. *Kemas xanthoceiros* Heude, *loc. cit.* 243. Western Szechuan.
1894. *Kemas iodinus* Heude, *loc. cit.* Eastern Szechuan.
1894. *Kemas pinchonianus* Heude, *loc. cit.* Western Szechuan.
1894. *Kemas initialis* Heude, *loc. cit.* 244. Chenkouting, Szechuan.
1894. *Kemas curvicornis* Heude, *loc. cit.* Chenkouting, Szechuan.
1894. *Kemas versicolor* Heude, *loc. cit.* Chenkouting, Szechuan.
1905. *Urotragus evansi* Lydekker, Zoologist, *9:* 83. Mt. Victoria, Pokokku district, Arakan, Burma.

Range: Szechuan, Yunnan, Burma.

NEMORHAEDUS GORAL ARNOUXIANUS Heude, 1888

1888. *Kemas arnouxianus* Heude, Mém. H.N. Emp. Chin. *2:* 3 (footnote). Kihsien, Chekiang, South-Eastern China.
1890. *Kemas henryanus* Henry, P.Z.S. 93. Near Ichang, Hupeh, China.
1894. *Kemas aldridgeanus* Heude, Mém. H.N. Emp. Chin. *2:* 244. Hupeh (Yitchang).
1894. *Kemas fantozatianus* Heude, *loc. cit.* 245. Mountains of Kiun-tcheou, right bank of Middle Han, Province of Hupeh, China.

NEMORHAEDUS GORAL RADDEANUS Heude, 1894

1894. *Kemas raddeanus* Heude, Mém. H.N. Emp. Chin. *2:* 240. Amur River. Range: Korea to South-Eastern Siberia. G. Allen thought this race might = *caudatus*.

NEMORHAEDUS GORAL HODGSONI Pocock, 1908

1908. *Naemorhedus hodgsoni* Pocock, P.Z.S. 195. Sikkim. Ranges to Nepal.

NEMORHAEDUS GORAL BAILEYI Pocock, 1914

1914. *Nemorhaedus baileyi* Pocock, J. Bombay N.H. Soc. *23:* 32. Dre, on bank of Yigrong Tso (Lake) in Po Me, 9,000 ft., Tibet.

Genus **HEMITRAGUS** Hodgson, 1841

1841. *Hemitragus* Hodgson, Calcutta J.N.H. *2:* 218. *Capra quadrimammis* vel *jharal* Hodgson = *Capra jemlahica* Smith.
1852. *Kemas* Gray, Cat. Mammalia B.M. *3:* 146. Not of Ogilby, 1837. *Capra* (*Ibex*) *warryato* Gray = *Kemas hylocrius* Ogilby.

3 species: *Hemitragus hylocrius*, page 403 *Hemitragus jemlahicus*, page 403 *Hemitragus jayakari*, page 403

This genus belongs to the Caprine division (Tribe Caprini of Simpson). It is near *Capra*, but has the relatively short horns present in the Rupicaprine division (Tribe Rupicaprini of Simpson). The horns in the female are not much smaller than those of the males. It differs from the Rupicaprini in having much more stoutly built horns. For the characters of the three species, see Lydekker, 1913, *Cat. Ungulate Mamm. 1:* 173. *H. jayakari* is closely related to *jemlahicus*, and perhaps could be regarded as a subspecies of that form.

Hemitragus jemlahicus H. Smith, 1826 Himalayan Tahr (or Thar)

Approximate distribution of species: Himalayas, from Pir Panjal Mountains, Kashmir, Punjab, Kumaon, Nepal to Sikkim.

Hemitragus jemlahicus jemlahicus H. Smith, 1826

1826. *Capra jemlahica* (misprinted *jemlanica* in text, 308, 1827) H. Smith, Griffith's Cuvier Anim. Kingd. *4:* pl. opposite p. 308. Jemla Hills, Nepal.
1833. *Capra jharal* Hodgson, Asiatick Res. *18*, 2: 129. Nepal.
1836. *Capra quadrimammis* Hodgson, J. Asiat. Soc. Bengal, *4:* 710. Nepal.
1845. *Capra tubericornis* Schinz, Syn. Mamm. *2:* 467. Substitute for *jemlahica*.
1847. *Hemitragus jemlaicus* Gray, List Osteol. Specimens B.M. 60. Nepal.

Hemitragus jemlahicus schaeferi Pohle, 1944

1944. *Hemitragus jemlahicus schaeferi* Pohle, Zool. Anz. *144:* 184. Ten kilometres north-west of Chuntang, Sikkim.

Hemitragus jayakari Thomas, 1894 Arabian Tahr

Approximate distribution of species: Oman district of Eastern Arabia.

Hemitragus jayakari Thomas, 1894

1894. *Hemitragus jayakari* Thomas, Ann. Mag. N.H. *13:* 365. Jebel Taw, Jebel Akhdar Range, Oman, South-Eastern Arabia.

Hemitragus hylocrius Ogilby, 1838 Nilgiri Tahr or "Ibex"

Approximate distribution of species: Nilgiri Hills and adjacent hill ranges to the south, Travancore included, Southern India.

Hemitragus hylocrius Ogilby, 1838

1838. *Kemas hylocrius* Ogilby, P.Z.S. *1837:* 81. Nilgiri Hills, Southern India.
1842. *Capra* (*Ibex*) *warryato* Gray, Ann. Mag. N.H. *10:* 267. Nilgiri Hills, Southern India.

Genus **CAPRA** Linnaeus, 1758

1758. *Capra* Linnaeus, Syst. Nat. 10th ed. *1:* 68. *Capra hircus* Linnaeus, the domestic Goat.
1762. *Hircus* Brisson, Regn. Anim. *12.* *Hircus* Brisson = *Capra hircus* Linnaeus.
1776. *Ibex* Pallas, Spic. Zool. *11:* 52. *Ibex sibiricus* Pallas.
1795. *Aries* Link, Zool. Beytr. *1*, 2: 96. Substitute for *Capra*.
1798. *Tragus* Schrank, Fauna Boica, *1:* 78. Substitute for *Capra*.
1811. *Aegoceros* Pallas, Zoogr. Ross. Asiat. *1:* 224. *Capra hircus* Linnaeus.
1905. *Orthaegoceros* Trouessart, Cat. Mamm. Suppl. 738. *Capra falconeri* Wagner. Valid as a subgenus.
1916. *Turus* Hilzheimer, in Brehm's Tierleben, 4th ed., Säuget. *4:* 273. *Capra caucasica* Güldenstaedt & Pallas.
1916. *Euibex* Camerano, Atti Accad. Torino, *51:* 338. *Capra ibex* Linnaeus.
1916. *Eucapra* Camerano, Atti Accad. Torino, *51:* 338. *Capra sibirica* Mayer.
1949. *Turocapra* de Beaux, Atti Soc. Ital. Sci. Nat. Milano, *88:* 17. *Capra pyrenaica* Schinz.

5 species: *Capra caucasica*, page 407 — *Capra ibex*, *page* 406
Capra falconeri, page 408 — *Capra pyrenaica*, page 408
Capra hircus, page 405

Schwarz, 1935, *Ann. Mag. N.H. 16:* 433, came to the conclusion that apart from the Markhors (*Orthaegoceros*) the wild goats and ibexes of the Palaearctic belonged to only two species:

a) *Capra ibex* Linnaeus, a northern species with insignificant or no white marks on the wrist, and with horns always with a broad frontal surface upon which parallel knots are usually developed. Schwarz included in this species the Spanish Ibex and the Caucasian Turs.

b) *Capra hircus* Linnaeus, a southern species with distinct white wrist-marks and a tendency to develop a keel on the antero-median edge of the horns. Apart from the wild goats, Schwarz included here the Nubian Ibex.

The above division does not, however, commend itself to us. The horns of many specimens of *Capra ibex ibex* itself show a distinct antero-median keel, indistinguishable from that found in the Nubian Ibex, and Schwarz, having separated these two forms specifically, though they appear to be no more than races, then finds no difficulty in accepting the Spanish Ibex as a race of *Capra ibex*, though the two are so readily distinguishable (de Beaux, 1949, has proposed a new subgenus *Turocapra* for the Spanish Ibex). Schwarz includes the Caucasian Turs in *Capra ibex* apparently on the ground that their juvenile horns resemble the adult horns in *Capra ibex severtzovi*. This certainly indicates an affinity, but surely not necessarily more than a subfamily one.

For these reasons we have not followed Schwarz, and regard the Palaearctic goats and ibexes as falling into five species. For each of these there is a subgeneric name available, as listed below (though the only one which we adopt is *Orthaegoceros*).

1. *Capra hircus* (Subgenus *Capra*), the wild goats. The horns have the anterior surface laterally compressed so as to form a more or less sharp anterior keel. The horn is curved like a scimitar.

2. *Capra ibex* (subgenus *Ibex*), the ibexes. The horns have a relatively flat anterior surface with relatively evenly-spaced cross ridges or knots. The horn is curved like a scimitar.
3. *Capra caucasica* (subgenus *Turus*), the Caucasian turs. The horns are almost circular in cross-section and curve out and up, then back, then inwards and up.
4. *Capra pyrenaica* (subgenus *Turocapra*), the Spanish ibex. Horns similar to those of *caucasica* but with a well-developed postero-median keel.
5. *Capra falconeri* (Subgenus *Orthaegoceros*), the markhors. Horns with a posterior and anterior keel and twisted either like a screw or in an open spiral.

Subgenus *CAPRA* Linnaeus, 1758

Capra hircus Linnaeus, 1758 Goats

(*Capra hircus* Linnaeus, 1758, Syst. Nat. 10th ed. *1:* 68 (the domestic Goat of Sweden).)

Approximate distribution of species: as here understood, wild forms occur in the Greek Islands, Caucasus, Southern Turkmenia in Russian Turkestan, Asia Minor, Persia, to Baluchistan and Western Sind, India.

Capra hircus aegagrus Erxleben, 1777. Wild Goat

1777. *Capra aegagrus* Erxleben, Syst. Regn. Anim. 260. Daghestan district of the Caucasus, South-Eastern Russia.
1788. *Antilope gazella* Gmelin, Syst. Nat. *1:* 190. Not *Capra gazella* Linnaeus, 1758 (which is the South African Gemsbok). Persia.
1838. *Capra cretica* Schinz, N. Denkschr. Schweiz. Ges. Naturwiss. *2:* 10. Crete.
1843. *Capra caucasica* Gray, List Mamm. B.M. 167. Not of Güldenstaedt & Pallas, 1783.
1858. *Aegocerus pictus* Erhard, Fauna Cykladen, 29. Antimilo (Erimomilos), Cyclades (Islands), Greece.
1888. *Capra dorcas* Reichenow, Zool. Jb. Abt. Syst. *3:* 594. Giura Island, Northern Sporades, Greece. (A domesticated form, according to Lydekker.) Not of Linnaeus, 1758.
1899. *Capra aegagrus* var. *jourensis* Ivrea, P.Z.S. 599. Joura Island, Aegean Sea.
1899. *Capra aegagrus cretensis* Lorenz, Wiss. Mitt. Bosnia u. Herzegovina, *6:* 865. Crete. "A small, imperfectly known goat, which may or may not be pure-blooded" (Lydekker, 1913).
1905. *Capra persica* Matschie, Weidwerk in Wort u. Bild, *14:* 174. Laristan, Persia.
1907. *Capra florstedti* Matschie, Weidwerk in Wort u Bild, *16:* 237. Bulghar Dagh, Asia Minor.
1907. *Capra cilicica* Matschie, *loc. cit.* Bulgar Dagh, Asia Minor.

Range: Greek Islands, Asia Minor, Persia, Caucasus.

Capra hircus blythi Hume, 1875. Sind "Ibex"; Pasang (Persia)

1875. *Capra blythi* Hume, Proc. Asiat. Soc. Bengal, *1874:* 240. Sind, India.
(?) 1928. *Capra hircus neglectus* "Zar. & Bilk." in Ognev & Heptner, Zool. Anz. *75:* 266. ? Bandan Range, on Afghan border of Persia. ("Bendoun im W.N.W. von Seistan-Persien.")

Range: Western Sind, Baluchistan and Turkmenia.

Capra ibex Linnaeus, 1758 Ibex

Approximate distribution of species: Alps of Northern Italy (for European details see under *C. i. ibex*); Caucasus; mountains of Russian Turkestan and Central Siberia (Sayan, Altai, Tianshan, Alai, Hissar, Pamir ranges), Mongolia, Chinese Turkestan; Kashmir, Northern Punjab (to Kumaon, according to Prater); Afghanistan, Palestine, Arabia, Egypt, the Sudan and Abyssinia.

Capra ibex ibex Linnaeus, 1758

1758. *Capra ibex* Linnaeus, Syst. Nat. 10th ed. *1:* 68. Valais, Switzerland.
1786. *Capra alpina* Girtanner, J. Physique, *28:* 224. Substitute for *ibex*.
1847. *Ibex europea* Hodgson, J. Asiat. Soc. Bengal, *16:* 700. Europe.
1912. *Capra ibex graicus* Matschie, Deutsche Jäger-Zeitung, *59:* 102. Valsavaranche, south-west of Aosta, Graian Alps, Italy.

Formerly ranged through Alps of France, Switzerland, Bavaria, Italy and Austria, but became extinct except for a colony in the Gran Paradiso National Park in Italy, and perhaps a colony near Salzburg in Austria. Since reintroduced into Switzerland, where they are well established, Bavaria and Austria, and also introduced into Yugoslavia.

Capra ibex sibirica Pallas, 1776 Siberian Ibex

1776. *Ibex sibiricus* Pallas, Spic. Zool. *11:* 52. Northern slope of Sayan Mountains, in neighbourhood of Munku Sardyx, west of Lake Baikal, Siberia (Lydekker).
1838. *Capra pallasii* Schinz, N. Denkschr. Schweiz. Ges. Naturwiss. *2:* 9. Renaming of *sibiricus*.
1841. *Capra ibex* var. *hemalayanus* Hodgson, Calcutta J.N.H. *2:* 414. Nepal.
(?) 1842. *Capra sakeen* Blyth, J. Asiat. Soc. Bengal, *11:* 283. Tibetan slopes of Himalayas.
1844. *Aegoceros skyn* Wagner, Schreb. Säugeth. Suppl. *4:* 491. Baltistan, Kashmir.
1847. *Ibex sakin* Hodgson, J. Asiat. Soc. Bengal, *16:* 700, *nom. nud.*
1886. *Capra dauvergnii* Sterndale, J. Bombay N.H. Soc. *1:* 26. Based on a skull with horns believed to have come from the hills north of the Kishengunga River, Kashmir.
1898. *Capra sibirica sacin* Lydekker, Wild Oxen, Sheep & Goats, 284. Substitute for *skyn*.
1900. *Capra sibirica wardi* Lydekker, Great & Small Game of India, 101. Braldu, Baltistan, in neighbourhood of Baltoro Glacier, Kashmir.
1900. *Capra sibirica lydekkeri* Rothschild, Novit. Zool. *7:* 277. Katutay Range of Irtish Altai, Siberia.
1902. *Capra altaica* Noack, Zool. Anz. *25:* 623. Irtish Altai, Siberia.
1902. *Capra fasciata* Noack, Zool. Anz. *25:* 623. North-Eastern Altai, in neighbourhood of Lake Telezko, Siberia.
1902. *Capra alaiana* Noack, Zool. Anz. *25:* 624. "Probably from the Alai Mountains," Turkestan. (The type was obtained in Tashkent.)
1903. *Capra sibirica* var. *hagenbecki* Noack, Zool. Anz. *26:* 384. Ektag-Altai, near Kobdo, Mongolia.
1906. *Capra sibirica typica* Lorenz, Denkschr. Akad. Wiss. Wien, *80:* 95. Tunkinskie Belki, east of Irkutsk, Siberia.

1906. *Capra sibirica almasyi* Lorenz, Denkschr. Akad. Wiss. Wien, *80:* 89 and 98. Ak Szu, Terskei-Alatau chain, Tian Shan Mountains, Kirghizistan.
1906. *Capra sibirica transalaiana* Lorenz, *loc. cit.* 90 and 103. Southern slopes of Trans-Alai Mountains, Tadjikistan.
1906. *Capra sibirica pedri* Lorenz, *loc. cit.* 94. Gilgit, Kashmir.
1906. *Ibex sibirica merzbacheri* Leisewitz, Zool. Anz. *29:* 655. Western Tian Shan Mountains.
1911. *Capra sibirica filippii* Camerano, Atti Accad. Torino, *46:* 209. Lahul, North-Western India.

Range: Indian, Chinese, Siberian range of the species, and Afghanistan.

Capra ibex nubiana F. Cuvier, 1825. Nubian Ibex or Beden

1825. *Capra nubiana* F. Cuvier in Geoffroy & Cuvier, H.N. Mamm. *3:* 50; Bouc Sauvage de la Haute-Égypte, 2 and pl. 397. Upper Egypt.
1833. *Capra sinaitica* Ehrenberg in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* sig. kk, pl. 18. Sinai. (Flower, 1932, P.Z.S. 436, was unable to find any constant difference between the ibex of Sinai and those of Upper Egypt and Nubia.)
1835. *Capra arabica* Rüppell, Neue Wirbelth. Abyssinien, Säugeth. 17. Sinai.
1835. *Aegoceros beden* Wagner, Schreb. Säugeth. *5:* 1303. Hejaz, Arabia.
1896. *Capra mengesi* Noack, Zool. Anz. *19:* 353. Hadramaut, South-Eastern Arabia.
1908. *Capra nubiana typica* Lydekker, Game Animals Africa, 89.

Range: Sinai, Palestine, Syria, Arabia, Upper Egypt, the Sudan. (Also survives in a reservation about 50 miles south-east of Cairo, Egypt.)

Capra ibex severtzovi Menzbier, 1888

1888. *Capra severtzowi* Menzbier, P.Z.S. *1887:* 618. Western Caucasus, in the central chain, to the west of Mt. Elbruz, and to the south of the chain of Teberda (Lydekker).
1901. *Capra raddei* Matschie, S.B. Ges. Naturf. Fr. Berlin, 32. Upper part of the Ingur Valley, South-Western Caucasus.
1905. *Capra dinniki* Satunin, Zool. Anz. *29:* 344. Extreme north-western end of main chain of Caucasus Mountains. Based on young examples of *severtzovi*, according to Bobrinskii.

Capra caucasica Güldenstaedt & Pallas, 1783 Caucasian Tur

Approximate distribution of species: Caucasus, South-Eastern Russia.

Capra caucasica Güldenstaedt & Pallas, 1783

1783. *Capra caucasica* Güldenstaedt & Pallas, Acta Ac. Sci. Petrop. *1779*, 2: 273. District of Malka and Baksan, eastward of Mt. Elbruz, Central Caucasus.
1811. *Aegoceros ammon* Pallas, Zoogr. Rosso-Asiat. *1:* 229. Not of Linnaeus, 1758.
1841. *Ovis cylindricornis* Blyth, P.Z.S. *1840:* 68. Eastern Caucasus, probably neighbourhood of Kasbeg.
1841. *Aegoceros pallasii* Rouillier, Bull. Soc. Nat. Moscou, 910. Caucasus. Not of Schinz, 1838.

Capra pyrenaica Schinz, 1838 Spanish Ibex

Approximate distribution of species: Spain.

CAPRA PYRENAICA PYRENAICA Schinz, 1838

1838. *Capra pyrenaica* Schinz, N. Denkschr. Schweiz. Ges. Naturwiss. *2:* 9. Spanish Pyrenees restricted to "vicinity of Maladetta Pass, in Huesca" (Harper, 1940).

1898. *Capra pyrenaica typica* Lydekker, Wild Oxen, Sheep & Goats, 257.

Probably now extinct.

CAPRA PYRENAICA HISPANICA Schimper, 1848

1848. *Capra hispanica* Schimper, C.R. Acad. Sci. Paris, *26:* 318. Mt. Veleta, Sierra Nevada, South-Eastern Spain.

CAPRA PYRENAICA LUSITANICA Schlegel, 1872

1872. *Capra lusitanica* Schlegel, Dierentuin K. Zool. Genootsch. Nat. Art. Mag. Amsterdam, Zoogd. 96. Serra do Gerez, Northern Portugal. (See Hollister, 1918, Proc. Biol. Soc. Washington, *31:* 93.) (Extinct about 1892 (Harper, 1945).)

CAPRA PYRENAICA VICTORIAE Cabrera, 1911

1911. *Capra pyrenaica victoriae* Cabrera, P.Z.S. 975. Madrigal de la Vera, southern slope of Sierra de Gredos, west of Madrid, Spain.

Subgenus *ORTHAEGOCEROS* Trouessart, 1905

Capra falconeri Wagner, 1839 Markhor

Approximate distribution of species: Southern Russian Turkestan (extreme south of Usbekistan, and south-west of Tadjikistan), Afghanistan, Kashmir, Punjab, Baluchistan.

CAPRA FALCONERI FALCONERI Wagner, 1839

1839. *Aegoceros* (*Capra*) *falconeri* Wagner, Munch. Gelehrt. Anz. *9:* 430. Kashmir restricted to Astor by Lydekker, 1913).

1898. *Capra falconeri typica* Lydekker, Wild Oxen, Sheep & Goats, 288.

Range includes Baltistan, Indus Valley.

CAPRA FALCONERI MEGACEROS Hutton, 1842

1842. *Capra megaceros* Hutton, Calcutta J.N.H. *2:* 535. Kandahar, Afghanistan. Range: to Baluchistan.

CAPRA FALCONERI JERDONI Hume, 1875

1875. *Capra jerdoni* Hume, Proc. Asiat. Soc. Bengal, *1874:* 240. Suleman Range, Trans-Indus district of Punjab.

CAPRA FALCONERI CASHMIRIENSIS Lydekker, 1898

1898. *Capra falconeri cashmiriensis* Lydekker, Wild Oxen, Sheep & Goats, 290. Pir-Panjal Range, Kashmir.

CAPRA FALCONERI CHIALTANENSIS Lydekker, 1913

1913. *Capra falconeri chialtanensis* Lydekker, Cat. Ungulate Mamm. B.M. *1:* 171. The Chialtan Range, near Quetta, Baluchistan.

CAPRA FALCONERI HEPTNERI Zalkin, 1945

1945. *Capra falconeri heptneri* Zalkin, C.R. Acad. Sci. U.R.S.S. *46:* 211. Dashtidjum district, Tadjikistan, Russian Turkestan.

CAPRA FALCONERI OGNEVI Zalkin, 1945

1945. *Capra falconeri ognevi* Zalkin, C.R. Acad. Sci. U.R.S.S. *46:* 211. Kughitang, Karluk region (north-west of Shirabad, in Usbekistan), Russian Turkestan.

Genus **AMMOTRAGUS** Blyth, 1840

1840. *Ammotragus* Blyth, P.Z.S. 13. *Ovis tragelaphus* Auctorum = *Antilope lervia* Pallas.

1 species: *Ammotragus lervia*, page 409

The genera *Ammotragus* and *Pseudois* are often regarded as aberrant sheep with goat-like affinities, but it should be the other way round. *Ammotragus* is goat-like in all characters (see below, under the genus *Ovis*, for differences between sheep and goats) except for its lack of a beard, the shape of the horns and the upper ends of the premaxillae not being wedged between the nasals and the maxillae. The males even have a goaty smell during the breeding season. The mane is a feature unique to this genus.

Pseudois, the next genus, is sheep-like in the absence of a beard and any goaty smell, but in nearly every other way it resembles the genus *Capra*, and its horns are very like those of the Caucasian Tur.

The skulls of *Pseudois* and *Ammotragus* are quite distinct from each other, especially in the parietal and occipital region where the whole shape and structure is entirely different, and *Pseudois* is very short in this region whereas *Ammotragus* has this part elongated and bent down at an angle to the line of the palate. The bullae are quite different in shape in the two genera. Further, the horn cores in *Ammotragus* lie in the frontal plane, whereas in *Pseudois* they rise up sharply above it.

Ammotragus lervia Pallas, 1777 Barbary Sheep; Arui; Aoudad

Approximate distribution of species: North Africa. Rio de Oro and Mauretania (the subspecific status of this sheep has not been determined), Algeria, Morocco, Tunis, Libya and Egypt, south to the bend of the Niger, Asben, and Kordofan in the Sudan.

AMMOTRAGUS LERVIA LERVIA Pallas, 1777

1777. *Antilope lervia* Pallas, Spicil. Zool. *12:* 12. Department of Oran, Western Algeria (Harper, 1940).

1815. *Ovis tragelaphus* Afzelius, Nova Acta Soc. Sci. Upsal. *7:* 216. Based on "*Tragelaphus*" of Caius, the specimen having been brought to England from Barbary and said by Caius to have come from the mountainous and rocky

AMMOTRAGUS LERVIA LERVIA [*contd.*]

parts of Mauretania. It appears that the word "Mauretania", as used in the sixteenth century, was loosely applied to the whole of the North-West African coast, and it is likely that Caius's sheep came from the Atlas Mountains and not from what is called Mauretania today.

Range: Morocco, Algeria, Tunis.

AMMOTRAGUS LERVIA ORNATUS I. Geoffroy, 1827

1827. *Ovis ornata* I. Geoffroy, Dict. Class. H.N. *11:* 264. Near Cairo, Egypt. Now extinct in Lower Egypt, but a few may still exist in Upper Egypt between the Nile and the Red Sea.

AMMOTRAGUS LERVIA SAHARIENSIS Rothschild, 1913

1913. *Ovis lervia sahariensis* Rothschild, Novit. Zool. *20:* 459. Oued Mya, 28°30′ N., 03° E., Algerian Sahara. Range: West-Central Sahara.

AMMOTRAGUS LERVIA FASSINI Lepri, 1930

1930. *Ammotragus lervia fassini* Lepri, Atti Pont. Accad. Sci. Nuovi Lincei, Roma, *83:* 271. Garian, Libya. Range: Libya.

Genus **PSEUDOIS** Hodgson, 1846

1846. *Pseudois* Hodgson, J. Asiat. Soc. Bengal, *15:* 343. *Ovis nayaur* Hodgson.
1872. *Pseudovis* Gill, Arrangement Fam. Mamm. 79. For *Pseudois* Hodgson.

1 species: *Pseudois nayaur*, page 410

For characters of this genus see under *Ammotragus*, above.

Pseudois nayaur Hodgson, 1833 — Bharal; Blue Sheep

Approximate distribution of species: Kansu, Szechuan and Shensi, China, north into Inner Mongolia (G. Allen); Tibet. Sikkim, Nepal to Kashmir.

PSEUDOIS NAYAUR NAYAUR Hodgson, 1833

1833. *Ovis nayaur* Hodgson, Asiatick. Res. *18*, 2: 135. Tibetan frontier of Nepal.
1835. *Ovis nahoor* Hodgson, P.Z.S. *1834:* 107. Alternative to *nayaur*.
1841. *Ovis burrhel* Blyth, P.Z.S. *1840:* 67. "Boorendo Pass."
1843. *Ovis nahura* Gray, List Mamm. B.M. 170. Nepal.
1846. *Ovis barhal* Hodgson, J. Asiat. Soc. Bengal, *15:* 342. Emendation of *burrhel*.

Range: Himalayas, Tibet.

PSEUDOIS NAYAUR SZECHUANENSIS Rothschild, 1922

1922. *Pseudois nahoor szechuanensis* Rothschild, Ann. Mag. N.H. *10:* 231. Shensi, China.
1928. *Pseudois nayaur caesia* Howell, Proc. Biol. Soc. Washington, *41:* 118. Archuen, Minshan Mountains, 140 miles south of Lanchow, Kansu, China.

Range: Chinese range of the species.

Genus **OVIS** Linnaeus, 1758

1758. *Ovis* Linnaeus, Syst. Nat. 10th ed. *1:* 70. *Ovis aries* Linnaeus (the Domestic Sheep).
1762. *Aries* Brisson, Regn. Anim. 12. *Aries* Brisson = *Ovis aries* Linnaeus.
1776. *Musimon* Pallas, Spic. Zool. *11:* 8. *Musimon asiaticus* Pallas = *Capra ammon* Linnaeus.
1798. *Musmon* Schrank, Fauna Boica, *1:* 78. Substitute for *Ovis*.
1816. *Ammon* Blainville, Bull. Soc. Philom. Paris, 76. Substitute for *Ovis*.
1847. *Caprovis* Hodgson, J. Asiat. Soc. Bengal, *16:* 702 *Ovis musimon* Pallas.
1852. *Argali* Gray, Cat. Mamm. B.M. *3:* 174. *Aegoceros argali* Pallas = *Ovis ammon* Linnaeus.
1936. *Pachyceros* Gromova, Neue Forschungen in Tierzucht u. Abstammungslehre (Festschr. z. 60 Geburstag Dr. Duerst, Bern), 84. *Ovis nivicola* Eschscholtz. Valid as a subgenus.

5 species: *Ovis ammon*, page 413
Ovis canadensis, page 413
Ovis laristanica, page 418
Ovis musimon, page 418
Ovis orientalis, page 416

The classification here followed is that of Nasonov, 1923, *The geographical distribution of the wild sheep of the old world*, Petrograd, as modified by Gromova (Ueber Kraniologie u. Geschichte der Gattung *Ovis*—in Duerst, 1936, *Neue Forschungen in Tierzucht u. Abstammungslehre*, Bern), except that whereas Gromova regarded *ophion*, *gmelini* and *vignei* as probable races of *orientalis*, we list them as such without further ado.

We also refer *nivicola* as a race to *canadensis*, though this is a purely nomenclatural difference; it is not clear why the Russians do not do likewise since they agree that the bighorn of North-Eastern Siberia and North-Western America are conspecific, and *canadensis* is the prior name. Nasonov's paper is in Russian, but a summary of some of his conclusions is given in English by Sushkin, 1925, *J. Mammal. 6:* 145.

Ovis canadensis differs from all the other wild sheep occurring in the Old World in its very shallow, scarcely discernible, lachrymal pits, in the shape of the horns and the pattern of ribbing on their surface, in the short facial portion of the skull relatively to the cranial portion as compared with the other Eurasian sheep, and in the great width of the skull, both relatively to its length and absolutely. Gromova recognized the distinctness of this sheep by proposing the subgeneric name *Pachyceros*.

The characters of the other Old World sheep are distributed in a mosaic fashion and no one or two characters suffice to separate one form from another. In fact, even combining all the available characters it is difficult to draw a clear line between even the reduced number of species here recognized. For instance, the westernmost forms of the *polii* group—*nigrimontana* and *severtzovi*—are intermediate between the rest of the *polii* group and *orientalis*, and these may well be really one species, in which case the prior name is *O. ammon* Linnaeus, 1758. However, for the moment, and as a matter of convenience, the argalis are kept separate from the mouflons. The South Persian mouflon, *laristanica*, is listed as a species, following Gromova, on account of its small size and relatively long snout and narrow skull, and the Sardinian

mouflon, *musimon*, is here given specific rank on account of its short facial and long cranial portions of the skull as compared with the other mouflons, and also its unusually long, bony palate which extends back level with the anterior rim of the orbit, or even beyond. It may be mentioned in passing, as an example of how complicated are the relationships of the Eurasian sheep, that in a number of characters, e.g. the shallow lachrymal pits and short face, the Sardinian mouflon more closely resembles the bighorn of North-Eastern Siberia than its nearest neighbour *ophion*, the mouflon of Cyprus.

The differences between sheep and goats are tabulated as follows:

Ovis	*Capra*
1. Tail, including hairs, shorter than ear.	Tail, including hairs, longer than ear.
2. Pedal glands present.	Pedal glands absent, at all events in the hind feet.
3. Sub-caudal glands absent.	Sub-caudal glands present in males.
4. No beard on chin.	"Goatee" beard in males.
5. Horns of males either in a spiral with the tips directed outwards, or bent in an arc of a circle with the tips pointing either forwards and slightly inwards, or towards each other behind the head.	Horns scimitar-like and bent back in a more or less vertical plane, or twisted like a screw and pointing up, or bent backwards over the neck in a single spiral turn with the tips pointing inwards and up.
6. Coronal suture projecting forward in an angle; lambdoidal suture forming a more or less straight line.	Coronal suture straight; lambdoidal suture projecting forward in an angle (Gromova in Bobrinskii, 1944).
7. Preorbital gland present; lachrymal pit well developed, or at least with its upper edge forming a distinct longitudinal ridge on the lachrymal bone.	No preorbital gland and hence no lachrymal pit or longitudinal ridge on the lachrymal bone.
8. Infraorbital foramen small and with a well defined rim all round it; its diameter about equal to the length of the last upper premolar.	Infraorbital foramen large and with no well defined rim anteriorly; its dorso-ventral diameter greater than the length of the last upper premolar (Gromova in Bobrinskii, 1944).
9. Upper ends of premaxillae not usually wedged between the nasals and the maxillae.	Upper ends of the premaxillae wedged between the nasals and the maxillae.

Subgenus *PACHYCEROS* Gromova, 1936

Ovis canadensis Shaw, 1804 Bighorn Sheep

Approximate distribution of species: in Siberia, from Anadyr and Kamtchatka almost to the mouth of the Yenesei (Syverma), and south to the Stanovoi Range. Western North America, Canada to Mexico.

(Ovis canadensis canadensis Shaw, 1804. Extralimital)
1804. *Ovis canadensis* Shaw, Naturalist's Misc. *15:* text to pl. 610. Mountains on Bow River, near Exshaw, Alberta, Canada. (See Anderson, 1947, Cat. Canadian Recent Mammals, 184.)

Ovis canadensis nivicola Eschscholtz, 1829
1829. *Ovis nivicola* Eschscholtz, Zool. Atlas, *1:* 1, pl. 1. Eastern Kamtchatka.
(?) 1904. *Ovis storcki* J. A. Allen, Bull. Amer. Mus. N.H. *20:* 293. One hundred and ten versts east of Fort Tigil, Western Kamtchatka.

Ovis canadensis borealis Severtzov, 1873
1873. *Ovis borealis* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 153. Syverma Range, between the sources of the Piasina and the Khatanga Rivers, North-Central Siberia.

Ovis canadensis alleni Matschie, 1907
1907. *Ovis alleni* Matschie, Niedieck's Kreuzfahrten im Beringmeer, 236. Taigonos Peninsula, North-Eastern Siberia.
1853. *Aegoceros (Ovis) montanus* Middendorff, Sibirische Reise, *2*, 2: 116. Not of Schreber, 1804. Stanovoi Mountains, Eastern Siberia.
1913. *Ovis middendorfi* Kowarzik, Zool. Anz. *41:* 443. Ud Valley, south-western side of Sea of Okhotsk.
Range: system of River Kolyma and Stanovoi Range, North-Eastern Siberia.

Ovis canadensis lydekkeri Kowarzik, 1913
1913. *Ovis borealis lydekkeri* Kowarzik, Zool. Anz. *41:* 443. Forty miles from mouth of Yana River, Northern Siberia. Range: Verhoiansk Range and the mountains east of it, Eastern Siberia.

Ovis canadensis potanini Nasonov, 1915
1915. *Ovis nivicola potanini* Nasonov, Bull. Acad. Sci. St. Pétersb. *9:* 1599. Yablonoi Mountains, Transbaikalia.

Subgenus *OVIS* Linnaeus, 1758

Ovis ammon Linnaeus, 1758 Argali

Approximate distribution of species: in U.S.S.R., Eastern Pamir, Trans-Alai and Alai Ranges, Nura-Tau, hills of Central Kizil-Kum, whole Tian Shan system, Tarbagatai, Kazakstan undulating country, where it survives in the east and possibly the extreme west, and Altai Mountains. Zungaria, Tibet, Mongolia, Shansi in

Northern China. Ladak and north of Sikkim, occasionally crossing into Nepal and Kumaon.

(*ammon* section)

Range: Altai of U.S.S.R. and Mongolia, Central Gobi, the Altyn Tagh, Tibet and Himalayas from Ladak to Sikkim.

OVIS AMMON AMMON Linnaeus, 1758

1758. *Capra ammon* Linnaeus, Syst. Nat. 10th ed. *1:* 70. Altai Mountains, near Ust-Kamenogorsk, on the Irtish River, Semipalatinsk, North-Eastern Russian Turkestan.
1776. *Musimon asiaticus* Pallas, Spic. Zool. *11:* 8. Upper Irtish River, Siberia.
1785. *Ovis argali* Boddaert, Elench. 147. Northern Asia.
1873. *Ovis argali altaica* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 154. Southern Altai Mountains.
1898. *Ovis ammon typica* Lydekker, Wild Oxen, Sheep & Goats, 177.

OVIS AMMON HODGSONI Blyth, 1841

1841. *Ovis hodgsonii* Blyth, P.Z.S. *1840:* 65 (published March, 1841). Tibet, probably on Nepal frontier (Lydekker).
1841. *Ovis ammonoides* Hodgson, J. Asiat. Soc. Bengal, *10:* 230 (published after March, 1841). "Himalayan region."
1852. *Caprovis hambhera* Gray, Cat. Mamm. B.M. *3:* 174. Nepal.
1873. *Ovis blythi* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 154. Tibet.
1874. *Ovis brookei* Ward, P.Z.S. 143. Ladak.
1892. *Ovis henrii* Milne-Edwards, Rev. Gén. Sci. Pur. Appl. 672. Tibet.

OVIS AMMON DARWINI Przewalski, 1883

1883. *Ovis darwini* Przewalski, Third Journey in C. Asia, 453 (in Russian). Southern slopes of Khurkhu Range, approximately 42° N., 105° E., Southern Gobi, Mongolia.
1873. *Ovis argali mongolica* Severtzov, Mém. Soc. Amis. Sci Nat. Moscou, *8*, 2: 154. Not *Ovis aries mongolica* Fitzinger, 1860. Mongolia.
(?) 1873. *Ovis argali dauricus* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: pl. iv.
1876. *Ovis jubata* Peters, MBer. Preuss. Akad. Wiss. 177. Not *Ovis aries jubata* Kerr, 1792. North of Pekin, Eastern Mongolia.
1919. *Ovis comosa* Hollister, Proc. Biol. Soc. Washington, *32:* 46. Substitute for *Ovis jubata* Peters.

OVIS AMMON DALAILAMAE Przewalski, 1888

1888. *Ovis dalai-lamae* Przewalski, Fourth Journey in C. Asia, 275. Gorge of River Zaysan-Saytu, approximately 38° N., 89° E., Sinkiang.

OVIS AMMON KOZLOVI Nasonov, 1913

1913. *Ovis kozlovi* Nasonov, Bull. Acad. Sci. St. Pétersb. *7:* 621. Yabarai Mountains, Southern Gobi, Mongolia.

Ovis ammon przevalskii Nasonov, 1923

1923. *Ovis ammon przevalskii* Nasonov, Distrib. Géograph Moutons Sauvages, 118. Saylyugem Range, Altai Mountains.

Ovis ammon intermedia Gromova, 1936

1936. *Ovis ammon intermedia* Gromova, Neue Forsch. in Tierz. u. Abstammungslehre (Festschr. z. 60 Geburstag von Dr. Duerst), 82. Noin-Bogdo Range, Central Gobi, Mongolia.

(*polii* section)

Range: mountain ranges between the headwaters of the Irtish and the Amu Darya, including the Pamirs in the south-east, the eastern Tian Shan in the east, the Tarbagatai range in the north, and the Kara Tau and Nura Tau in the west.

Ovis ammon polii Blyth, 1841

1841. *Ovis polii* Blyth, P.Z.S. *1840:* 62. Near sources of the Syr Daria, Pamir Plateau, Russian Turkestan.

1898. *Ovis poli typica* Lydekker, Wild Oxen, Sheep & Goats, 192.

1913. *Ovis ammon humei* Lydekker, Cat. Hume Bequest, 6. North-west of Kashgar, Tian Shan Mountains.

Ovis ammon karelini Severtzov, 1873

1873. *Ovis karelini* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 84, 86, pl. 1. Alatau of Semircchyia, between the Ili River and Issyk Kul, Russian Turkestan.

(?) 1873. *Ovis heinsii* Severtzov, *loc. cit.* 87. Tokmak district, north-west of Issyk Kul, Russian Turkestan.

Ovis ammon nigrimontana Severtzov, 1873

1873. *Ovis nigrimontana* Severtzov, Mém. Soc. Amis. Nat. Sci. Moscou, *8*, 2: 87. Karatau Province of Syr Daria, on east bank of Syr Daria, Russian Turkestan.

Ovis ammon collium Severtzov, 1873

1873. *Ovis collium* Severtzov, Mém. Soc. Amis. Sci. Nat. Moscou, *8*, 2: 154. Chinghiz-tau (Harper, 1945), Kirghiz Steppe, north of Lake Balkash, North-Eastern Russian Turkestan.

Ovis ammon sairensis Lydekker, 1898

1898. *Ovis sairensis* Lydekker, Wild Oxen, Sheep & Goats, 185. Sair Mountains. Zungaria.

Ovis ammon littledalei Lydekker, 1902

1902. *Ovis sairensis littledalei* Lydekker, P.Z.S. *1902*, 2: 83, pl. 7. One of the tributaries of the Ili, south-east of Kuldja, Chinese Turkestan.

Ovis ammon adametzi Kowarzik, 1913

1913. *Ovis poli adametzi* Kowarzik, Zool. Anz. *41:* 442. Lob Nor district, Chinese Turkestan.

Ovis ammon severtzovi Nasonov, 1914

1914. *Ovis severtzovi* Nasonov, Bull. Acad. Sci. St. Pétersb. *8:* 761. Nura-Tau Mountains, Kizil-kum, Russian Turkestan.

Incertae sedis

Ovis sculptorum Blyth, 1840, P.Z.S. 12 (*nom. nud.*), based on a specimen believed to have come from Mt. Taurus, "the horns of which could have supplied the model which the ancient sculptors followed in their representations of Jupiter Ammon" (!)

Ovis orientalis Gmelin, 1774 Asiatic Mouflon; Red Sheep; Urial; Shapo, etc.

Approximate distribution of species: mountains of Southern and West Russian Turkestan Mangyshlak, Ust-Urt, Kopet-Dag system, Southern Usbekistan and Tadjikistan, as far north as the Zeravshan and south-western corner of the Pamirs); Transcaucasia (Armenia); Asia Minor, Persia, Afghanistan, Cyprus; Kashmir, Punjab, Baluchistan.

(*orientalis* section)

Range: from the eastern Elburz Mountains eastwards through the Kopet-Dag to the Paropamisus Range in Afghanistan, and north to the Ust-Urt Plateau.

Ovis orientalis orientalis Gmelin, 1774. Red Sheep

1774. *Ovis orientalis* Gmelin, Reise Russ. Reichs. *3:* 432, 486. Eastern part of Elburz Mountains, Persia (Nasonov, 1923).

Ovis orientalis cycloceros Hutton, 1842

1842. *Ovis cycloceros* Hutton, Calcutta J.N.H. *2:* 514. Hazara Hills, Afghanistan.

Ovis orientalis arkal Eversmann, 1850

1850. *Ovis arkal* Eversmann, Estest. Istoriya Orenburgsk Kraya, *2:* 271. Ust-Urt Plateau, Russian Turkestan.

1852. *Ovis arkar* Brandt, Beitr. Kennt. Russ. Reiches, *17:* 310.

(?) 1905. *Ovis vignei varentsovi* Satunin, Mém. Sect. Caucas. Soc. Russe Géogr. *25:* 41 (of reprint). Kopet-Dag Mountains, Russian Turkestan.

Ovis orientalis dolgopolovi Nasonov, 1913

1913. *Ovis arcar dolgopolovi* Nasonov, Bull. Acad. Sci. St. Pétersb. *7:* 25. Near Astrabad, Persia.

(*gmelini* section)

Range: Western Elburz Mountains, Isfahan region, and Pusht-i-kuh Range in Western Persia, Koyun Daghi Island in Lake Urmi, Western Persia; ? Erzerum, in North-Eastern Asia Minor.

Ovis orientalis gmelini Blyth, 1841

1841. *Ovis gmelinii* Blyth, P.Z.S. *1840:* 69. Erzerum, Asia Minor (but no wild sheep have been found here since).
1898. *Ovis orientalis typica* Lydekker, Wild Oxen, Sheep & Goats, 160.

Ovis orientalis urmiana Günther, 1899

1899. *Ovis ophion* var. *urmiana* Günther, J. Linn. Soc. London, Zool. *27:* 374. Koyun Daghi Island, Lake Urmi, Western Persia.

Ovis orientalis erskinei Lydekker, 1904

1904. *Ovis gmelini erskinei* Lydekker, Field, *104:* 1031. Elburz Range, Persia.
1907. *Ovis orientalis typica* Lydekker, Ann. Mag. N.H. *20:* 122. Elburz Range, Persia.

Ovis orientalis isphahanica Nasonov, 1910

1910. *Ovis orientalis isphaganica* Nasonov, Bull. Acad. Sci. St. Pétersb. *4*, pl. facing p. 702 (*lapsus* for *isphahanica*); *Ovis urmiana isphahanica* Nasonov, *op. cit.* 1911, *5:* 1290. Isfahan, Persia.

(*vignei* section)

Range: from the Pyandzh River (Southern Tadjikistan) to the South-Western Pamirs, the Salt Range (Punjab) and the Sulaiman Range (Eastern Baluchistan); Kashmir included.

Ovis orientalis vignei Blyth, 1841. Urial; Shapo

1841. *Ovis vignei* Blyth, P.Z S. *1840:* 70. Astor, Kashmir.
1854. *Ovis montana* Cunningham, Ladak, 199. Not of Schreber, 1804. Ladak.
1898. *Ovis vignei typica* Lydekker, Wild Oxen, Sheep & Goats, 171.

Ovis orientalis blanfordi Hume, 1877

1877. *Ovis blanfordi* Hume, J. Asiat. Soc. Bengal, *46*, 2: 327, pl. 4. Hills above the Bolan Pass, near Kelat, Baluchistan.

Ovis orientalis punjabiensis Lydekker, 1913

1913. *Ovis vignei punjabiensis* Lydekker, Cat. Hume Bequest, 10. Salt Range, Punjab, India.

Ovis orientalis bochariensis Nasonov, 1914

1914. *Ovis vignei bochariensis* Nasonov, Bull. Acad. Sci. St. Pétersb. *8:* 1130. Baljuan, Russian Turkestan (approximately 38°20′ N., 69°30′ E.) (Nasonov, 1923).

(*ophion* section)

Range: Cyprus, Kara Dagh, Bulgar Dagh and Antitaurus in Asia Minor; Southern Transcaucasia, Armenia to Lake Van; north-western tip of Persia to Khoi.

Ovis orientalis ophion Blyth, 1841

1841. *Ovis ophion* Blyth, P.Z.S. *1840:* 73. Troödos Mountains, Cyprus.
1827. *Ovis musimon* var. *orientalis* Brandt & Ratzeburg, Getreue Darstellung u. Beschreibung der Thiere, *1:* 54. Cyprus. Not of Gmelin, 1774.
1842. *Ovis cyprius* Blasius, Versammlung Deutscher Naturf. u. Aerzte, *19:* 90. Cyprus.
1913. *Ovis orientalis orientalis* Lydekker, Cat. Ungulate Mamm. *1:* 79. Not of Gmelin, 1774.

Ovis orientalis anatolica Valenciennes, 1856

1856. *Ovis anatolica* Valenciennes, C.R. Acad. Sci. Paris, *43:* 65. Bulgar Dagh Mountains, Cilician Taurus, Asia Minor.

Ovis orientalis armeniana Nasonov, 1919

1919. *Ovis ophion armeniana* Nasonov. Bull. Acad. Sci. U.R.S.S. *13:* 1230. Mountains near town of Bayazid (near Mt. Ararat), Armenia, Transcaucasia.

Ovis laristanica Nasonov, 1909 Laristan Sheep

Approximate distribution of species: Laristan region, Southern Persia.

Ovis laristanica Nasonov, 1909

1909. *Ovis laristanica* Nasonov, Bull. Acad. Sci. St. Pétersb. *3:* 1179. Laristan, Southern Persia.

Ovis musimon Pallas, 1811 Mouflon

Approximate distribution of species: Sardinia and Corsica. (Introduced in Southern Russia (Crimea), Germany, Switzerland, Holland, Luxemburg, Italy, Poland, Czechoslovakia, Hungary, Yugoslavia, Rumania.)

Ovis musimon Pallas, 1811

1811. *Aegoceros musimon* Pallas, Zoogr. Rosso-Asiat. *1:* 230. Sardinia.
1827. *Ovis musmon* H. Smith, Griffith's Cuvier Anim. Kingd. *4:* 322. Sardinia.
1829. *Ovis musimon* var. *occidentalis* Brandt & Ratzeburg, Getreue Darstell. und Beschreib. Thiere, *1:* 55. Corsica.
1905. *Ovis matschiei* Duerst, Martin Wilckens Grundzuge der Naturg. der Haustiere, 2nd ed. 180. Corsica and Sardinia.
1913. *Ovis musimon occidento-sardinensis* Kowarzik, Zool. Anz. *41:* 440. Western Sardinia.
1913. *Ovis musimon corsico-sardinensis* Kowarzik, *loc. cit.* Northern Sardinia and Southern Corsica.

ORDER LAGOMORPHA

(Responsibility for the classification of the Orders Lagomorpha and Rodentia is taken by J. R. E.)

On this order see Lyon, 1904, Classification of the Hares and their Allies, *Smiths. Misc. Coll. 45:* 321–447; Forsyth Major, 1899, On fossil and recent Lagomorpha, *Trans Linn. Soc. London, 7:* 433–520; and on the status of the Order see Gidley, 1912, *Science, 36:* 285, 286; and Simpson, *1945, Bull. Amer. Mus. N.H. 85:* 196. On Ochotonidae, see Bonhote, 1905, *P.Z.S. 1904:* 205–220.

FAMILIES: Leporidae, page 419
Ochotonidae, page 445

FAMILY LEPORIDAE

Genera: *Caprolagus*, page 444
Lepus, page 429
Oryctolagus, page 443
Pentalagus, page 444

Dice, 1929, *J. Mamm. 10:* 340–344, divided this family into three subfamilies. The Palaeolaginae were characterized by having the main external re-entrant angle of enamel on the face of the lower P 3 not extending beyond the middle of the tooth and nearly meeting a strong internal re-entrant angle; the enamel pattern therefore forms an hourglass-shaped figure, and the tooth is formed of two vertical columns of dentine standing one in front of the other. This subfamily contained three living genera: *Pentalagus*, *Romerolagus* from Mexico, and *Pronolagus* from South Africa. The Archaeolaginae, based on fossil forms, was characterized by having no internal re-entrant angle in the lower P 3 and having the main external angle extending about half-way across the tooth. The Leporinae, which contained the rest of the living genera, was characterized by having no internal re-entrant angle on the lower P 3 and with the main external re-entrant angle extending completely across the tooth. Thus the Archaeolaginae seem intermediate between the other two. The three subfamilies are based on this one character alone, but it is not a good one, since with wear the pattern of the tooth in question changes considerably. Nevertheless, Simpson (1945) who tells us (p. 260) that "major subdivisions based on the presence or absence of single characters are almost never natural—nature simply does not work so accommodatingly", adopted the Palaeolaginae. Admittedly *Pentalagus* is immeasurably the most distinct genus in living Leporidae, but I cannot believe that it is especially related to *Pronolagus*, for instance, and I reject absolutely the allocation

of these genera and *Romerolagus* to a special subfamily which is supposed to be different from other living Leporidae.

Miller (1912, 484) divided the two genera of European Leporidae by saying that *Oryctolagus* has the mesopterygoid region narrow, the width of space immediately behind palate much less than the least longitudinal diameter of palate; whereas *Lepus* has the mesopterygoid region broad, the width of space immediately behind the palate greater than the least longitudinal diameter of palate. This statement requires some modification when all species of Hares (genus *Lepus*) and Rabbits (genera *Caprolagus*, *Oryctolagus*, *Pentalagus*, *Nesolagus*, *Pronolagus*) are taken into account, but examination of all skulls of Leporidae from Europe, Asia and Africa in the British Museum proves that the basic cranial difference between Hares and Rabbits certainly lies in this character. In *Lepus* the width of the space quoted above is a little less than, or subequal to, or usually greater than the length of the palatal bridge. In *Caprolagus* and allied genera the least longitudinal diameter of the palate averages over 130 per cent. of the width of the mesopterygoid space, whereas in *Lepus* it averages less than 130 per cent. and except in the aberrant *L. yarkandensis* less than 120 per cent. In addition to this cranial character, certain other osteological features were stated by Lyon to separate the two groups of genera. A point which emerges is that Simpson was wrong in treating *Poëlagus* as a subgenus of *Lepus*. *Poëlagus* clearly belongs with the Rabbit group of genera and I cannot see any good reason why this form should not be referred, as a subgenus, to *Pronolagus*. The only species of *Lepus* which appears to approach the *Caprolagus* group of genera in the cranial character quoted above is *Lepus yarkandensis* which has recently been separated generically as *Tarimolagus*. For this species we have only one skull available, and its status must remain provisional until more specimens come to hand.

The genus *Lepus* has, almost more than any other mammalian genus except certain Soricidae and Muridae, been a collector of specific names. No one, so far as I am aware, has ever attempted to revise this genus on a specific level, and in Europe, Asia and Africa alone there are not less than 68 alleged species standing, and it is clear that some revision is long overdue. It should be stated that the two prior specific names in the genus are *Lepus timidus*, and *Lepus capensis* from the Cape of Good Hope, both of which date from Linnaeus (1758). In order to appreciate the characters of *capensis* it has been found necessary to take measurements of all African skulls in the British Museum, as well as all Eurasian ones. A tentative revision is here offered, based on the more obvious external characters such as colour of the tail and certain skull measurements. It should be borne in mind that in this family the palate measurement has been taken from the *back* of the very long palatal foramina to the back of the palate. It must also be borne in mind that there are certain individual skulls which may overlap the cranial percentages given, as is invariable when one deals with very large numbers of specimens. European Leporidae were revised by Miller (1912); Russian forms have been dealt with by Vinogradov, Ognev and Bobrinskii; and Chinese ones, far from convincingly, by G. Allen. The latter author quite erroneously referred *Lepus sinensis* to *Caprolagus*, which should be restricted to its type from India. Tate has already pointed out this mistake. Also G. Allen made *Lepus tolai* a race of *L. europaeus*, which

seems completely wrong from two points of view: firstly because *tolai* has page priority over *europaeus*, and secondly because *tolai* may easily be separated from *europaeus* by size of skull. This fact is one of the few that emerges clearly when skulls of all species are compared in detail, and Russian authors retain both *tolai* and *europaeus* as valid species. *L. tolai* is, however, quite indistinguishable from *L. capensis*. According to the classification here adopted, *Lepus capensis* has a prodigious range—from the Cape of Good Hope to Spain, Turkestan, Kashmir, Mongolia and China. At all events, when all skulls of the species hitherto known as *capensis*, *tolai*, *granatensis*, *mediterraneus*, *sinaiticus*, *tibetanus*, *schlumbergeri*, *aegyptius*, etc., are compared I can find no characters of specific value which will separate them. This is perhaps not as revolutionary as it first appears. Several species of mammals penetrate from Tropical or East Africa through the Sahara and range into South-Western Asia, Turkestan and India, among them *Hyaena hyaena*, *Felis caracal*, *Canis aureus*, *Mellivora capensis*, *Acinonyx jubatus*, and many more occur from South-Western Asia through the Sahara into East Africa. It is not in the least surprising, therefore, that *Lepus*, which is essentially an open-country type, should do so. *Lepus capensis* is typical of a large section of the genus, characterized by the tail being normally sharply contrasted black and white above, and by having the palate normally shorter than the width of the mesopterygoid space immediately behind it. The forms which I refer to it are listed in detail in the key below. I have retained *Lepus atlanticus* from Morocco, a form with an unusually small skull, as a valid species, following Cabrera, and because of the probability that it occurs in the same general neighbourhood as one of the races of *capensis*. Two species which obviously belong to the *capensis* group differ in having the palate normally a little longer than the width of the mesopterygoid space just behind it. One of these is *L. salae*, from Angola (which is one of the few forms at present listed as a subspecies of *capensis*, but which from our material seems an aberrant and distinct type), and the other is *L. peguensis* from Burma, Indo-China and ? Hainan, which has much smaller bullae than *salae*. The *Lepus europaeus* group, as here understood, consists of species which occur extensively with *capensis* from the Cape northwards, and which have a larger skull, at least on average, than members of the *capensis* group just mentioned. The colour of the tail is as in the *capensis* group. The Palaearctic and India subspecies of *europaeus* and *capensis* both tend to be larger in average size of skull than their subspecies south of the Sahara; but the size difference between the species holds good, and *europaeus* is clearly the larger in any place where the two occur together. *Lepus europaeus* has the palate usually shorter than the mesopterygoid space immediately behind it (in this character it agrees with *capensis*), and as here understood it is considered to range from Western Siberia and Persia westwards to England and France, thence southwards to the Cape. I cannot find any characters which will certainly separate the South African *L. saxatilis* from *europaeus*, and treat the former and several other African and Western Asiatic forms (which are listed in detail in the key below) as subspecies of *europaeus*. There is a large group of hares in India and Ceylon for which the prior name is *L. nigricollis* which are also members of the *europaeus* group. They have all the essential characters of that group, including very large size of skull, and might almost represent a further eastward extension of *europaeus*. However, the Southern Indian *nigricollis* with its Ceylon

representative is remarkable for its black-streaked neck, and the remaining forms, which would be races of *ruficaudatus* if further specific division were required, have the upper part of the tail normally brown and white rather than black and white. The palate in *nigricollis* (with *ruficaudatus*, etc.) averages rather longer than in Palaearctic members of *L. europaeus*, but there is much individual overlap. Tentatively, *nigricollis* has been retained as a species. There seem to be two other members of the *europaeus* group which might be worthy of specific rank, both of them characterized by the palate being usually a little longer than the width of the mesopterygoid space immediately behind it. These are *Lepus siamensis* from Burma and Siam, which is perhaps closely allied to *L. peguensis* of the *capensis* group, but differs from *peguensis* in larger average skull; and *Lepus whytei* from Nyasaland and Mozambique. The latter has usually a smaller skull than *siamensis*. The only other species of the branch of the genus now under discussion which I have retained is a group for which the prior name is *Lepus arabicus*. This is very like *L. capensis* in all essential characters except one, the unusual size of the bullae, which is the maximum for the genus. It appears common in Arabia, and two outlying forms (*craspedotis* from Baluchistan and *whitakeri* from Libya) are provisionally referred to it. Some other species from Northern Eurasia and China differ from the *capensis* and *europaeus* groups in that the tail is most often not clearly contrasted black and white above. *Lepus sinensis*, which ranges from Formosa to Korea, is a rather small species as judged by length of skull, in which the anterior notch in front of the postorbital process is usually reduced or becoming obsolete. The tail seems mainly dull in the majority of specimens, and blackish seems to predominate if there is any marked colouring in its upper side. *Lepus timidus* has the tail with little or no black in it; whitish or white usually predominates. The skull usually has a clear notch in front of the postorbital processes. In some races, this species can be as large as many members of the *europaeus* group, but this is not a constant character. The Irish Hare is here considered a subspecies of *timidus*. *Lepus oiostolus* clearly represents the *timidus* group in the mountains of Central Asia, but has been retained on account of the tail being less shortened than in *timidus*. Another species with an aberrant tail colour is *Lepus monticularis* from Deelfontein, Richmond Division, Cape Province, in which the tail is all brown, and in which the bullae are larger on average than in *timidus*, *sinensis* and *oiostolus*. Thomas separated this species generically as *Bunolagus*, but there is far too much variation in the colour of the tail within the genus *Lepus* for *Bunolagus* to be given even subgeneric rank. *Lepus brachyurus*, from Japan, is a thoroughly distinct species. The tail is usually dark in colour, so far as I have been able to examine the species, the bullae are very small, on average smaller than all species quoted above, and the palate is a little longer than the mesopterygoid width just behind it. Finally, we have one skull of *Lepus yarkandensis*, the type, from Chinese Turkestan, which has the palatal bridge considerably longer than the mesopterygoid width, in fact nearly 130 per cent. of it, whereas in all other *Lepus* here dealt with it is below 120 per cent. This character might not prove constant if more specimens of *yarkandensis* were available, but as far as can be at present ascertained this species makes a distinct approach to the condition usually found in *Caprolagus* and allied genera of the Rabbit section. According to Kloss, the bullae are enlarged in *yarkandensis*. They are broken in the type skull. I am unable to define

characters for distinguishing more than the 15 species of *Lepus* dealt with above, in Europe, Asia and Africa. In the Rabbit section of genera, which are characterized, as already mentioned, by their very narrow mesopterygoid space, there are five genera currently recognized, and some eight species, in Eurasia and Africa. The prior generic name for this section is *Caprolagus*, and the most distinct of the genera is *Pentalagus*. The latter, with one species from Liukiu Islands, has a very long palatal bridge, 11.9–12.8 mm. in our two specimens; the posterior ends of the two nasal bones are much less excised than in the other genera, and tend to form nearly a straight line. The bullae are very reduced, less than one-tenth of the occipitonasal length. There is no clear notch in front of the postorbital process. The other genera have the palatal bridge shorter: less than 10 mm. in length except in two (out of four) skulls of the very large species *Pronolagus ruddi*, and the posterior end of the nasals is deeply excised. *Nesolagus* with one species from Sumatra is a very small animal as judged by length of skull, with the bullae about as reduced as in *Pentalagus*. Its palate is (relatively to the mesopterygoid width) considerably shorter than *Pentalagus*. The other species have the bullae averaging more than one-tenth of the occipitonasal length except *Pronolagus ruddi* which is a very large species, with a much larger skull than either of the two genera just mentioned. Apart from the character of the first lower premolar (*fide* Dice) *Pronolagus*, which occurs south of the Sahara only, is remarkable for its very narrow mesopterygoid width (or conversely its long palatal bridge), the palatal bridge averaging over 140 per cent. of the mesopterygoid space just behind it. In the typical subgenus the tail is reddish or blackish (without clear white colouring). The width of the mesopterygoid space behind the palate is in *Pronolagus sensu stricto* at minimum; usually less than 5 mm. I recognize three species of *Pronolagus sensu stricto: P. crassicaudatus*, smaller animal, with the occipitonasal length normally less than 80 mm., and the bullae not very reduced; *P. randensis* (including *caucinus*), larger animal, with the occipitonasal length normally at least 80 mm., rarely under 85 mm., and the bullae not very reduced; and *P. ruddi*, which is like *randensis* in size, but has unusually small bullae which are normally less than one-tenth of the occipitonasal length. The subgenus *Poëlagus* is essentially like *Pronolagus* but has the tail apparently brown above, white below; the occipitonasal length is rarely below 85 mm. and the width of the mesopterygoid space behind the palatal bridge is usually more than 5 mm., although narrow. *Poëlagus* was based on a form originally called *Lepus marjorita*, from Uganda, and is now known by several specimens. As already indicated above, it is not a *Lepus*, but can be regarded as a subgenus of *Pronolagus*. Two genera of Palaearctic or Indian Rabbits remain for discussion, *Oryctolagus* and *Caprolagus*. Both of these are said by Dice to differ from *Pronolagus* in the character of the first lower premolar. Cranially also they both differ by having the palatal bridge on average less than 140 per cent. of the mesopterygoid width just behind it. The notes and remarks on *Oryctolagus* are here based on the wild races; domestic varieties (which sometimes become surprisingly large in size of skull) are ignored. The genus is less changed from the typical Leporine type than is *Caprolagus* which is a large form with no notch in front of the postorbital process, and rather small bullae, the frontal bones very wide, and the tail not black and white above as it usually is in *Oryctolagus*.

Key to the Leporidae of Europe, Asia and Africa, based on all measurable skulls in the British Museum:

1. Mesopterygoid region narrow, the width of space immediately behind palate much shorter than the least longitudinal diameter of palatal bridge (palatal bridge averages more than 130 per cent. of mesopterygoid width just mentioned). Rabbits) ——2

   Mesopterygoid region wider; the width of space immediately behind palate a little shorter than, or subequal to, but most often longer than, length of palatal bridge (which averages less than 130 per cent., usually less than 120 per cent. of mesopterygoid width). (Hares) ——9

2. Length of palatal bridge 11.9–12.8 mm. in our specimens. Posterior ends of the two nasal bones form together a nearly straight line, or only a little curved. Bullae small, less than one-tenth of the occipitonasal length, which is 83.6–84.4 mm. (Genus *PENTALAGUS*) *PENTALAGUS FURNESSI*

   Length of the palatal bridge at most 10.4 mm., but except in *Pronolagus ruddi* is less than 10 mm. Posterior ends of nasal bones deeply excised, broadly W-shaped, or not forming a nearly straight line. ——3

3. Very small; occipitonasal length not more than 70.3 mm. Bullae much reduced, below one tenth of occipitonasal length. (Genus *NESOLAGUS* Forsyth Major, 1899. *NESOLAGUS NETSCHERI* Schlegel, 1880)
   (Extralimital, Sumatra)

   Larger; occipitonasal length not under 71 mm. (one exception in approximately 80 skulls). If the bullae are less than one-tenth of the occipitonasal length (*Pronolagus ruddi* only) then the occipitonasal length is not under 87 mm. ——4

4. Palatal bridge on average less than 140 per cent. of mesopterygoid space immediately behind it (Palaearctic and Indian). ——5

   Palatal bridge on average more than 140 per cent. of mesopterygoid space immediately behind it (south of the Sahara). ——6

5. No clear notch in front of postorbital processes. Frontal bones very wide. Occipitonasal length generally exceeds 85 mm. Bullae relatively smaller. Tail not black and white above. (Genus *CAPROLAGUS*)
   CAPROLAGUS HISPIDUS

   A clear notch in front of postorbital processes. Frontal bones less wide. Occipitonasal length, in the wild races, most often under 80 mm.[1] Bullae relatively larger. Tail usually black and white above. (Genus *ORYCTOLAGUS*)
   ORYCTOLAGUS CUNICULUS

6. Genus *PRONOLAGUS* Lyon, 1904.) Width of mesopterygoid space immediately behind palate normally exceeds 5 mm. Tail apparently brown above, white

[1] My calipers give a slightly smaller reading than Miller's (1912).

below. (The occipitonasal length is rarely below 85 mm.)

PRONOLAGUS (POËLAGUS) MARJORITA St. Leger, 1929

(This species is cranially a member of the *Caprolagus* series of genera (Rabbits) and should not be referred as a subgenus to *Lepus*. There seems, however, no reason why *Poëlagus*, which dates from St. Leger, 1932, should not be regarded as a subgenus of *Pronolagus*.)

(Forms examined: the typical race, Uganda, and *larkeni* St. Leger, 1935, Bahr-el-Ghazal, Sudan.)

Width of mesopterygoid space immediately behind palate normally less than 5 mm. Tail either reddish or blackish (without clear white colouring). ——7

7. Occipitonasal length usually less than 80 mm.

PRONOLAGUS CRASSICAUDATUS[1] Geoffroy, 1832

(Natal. Forms examined: the typical, *c. curryi* Thomas, 1902, Orange Free State; *c. nyikae* Thomas, 1902, Northern Nyasaland; *c. vallicola* Kershaw, 1924, Kenya. Localities include also Transvaal, Deelfontein (Richmond Division, Cape Province), etc.)

Occipitonasal length at least 80 mm., rarely under 85 mm. ——8

8. Bullae very small, less than one-tenth of occipitonasal length.

PRONOLAGUS RUDDI Thomas & Schwann, 1905

(Zululand; specimens also from Eastern Transvaal.)

Bullae more normal, more than one-tenth of occipitonasal length on average.

PRONOLAGUS RANDENSIS Jameson, 1907

(Near Johannesburg, Transvaal. Forms examined: the typical, and *r. caucinus* Thomas, 1929, Kaokoveld, South-West Africa.)

9. (Genus *LEPUS* Linnaeus, 1758.) Palatal bridge apparently nearly 130 per cent. of mesopterygoid space immediately behind it.

LEPUS (TARIMOLAGUS) YARKANDENSIS

Palatal bridge shorter, on average less than 120 per cent. of mesopterygoid space just mentioned. ——10

10. Bullae small, on average only 10 per cent. of occipitonasal length, which usually exceeds 90 mm. Palate usually a little longer than the mesopterygoid space just behind it. Tail apparently usually dark.

LEPUS (ALLOLAGUS) BRACHYURUS

(Forms examined: the typical, and *b. okiensis*.)

Bullae less reduced, not less than 11 per cent. on average of occipitonasal length. ——11

11. Tail normally not clearly contrasted black and white, or brown and white, above. (Except the form *coreanus*, palate normally shorter than mesopterygoid space immediately behind it.) ——12

Tail normally clearly contrasted black and white, or brown and white, above. ——15

[1] According to Roberts, 1951, *Mammals of South Africa* (received while checklist in the press) the name *P. crassicaudatus* should be used for the large species here called *ruddi*, while the prior name for the small species (which is split by Roberts into two or three species) should be taken as *P. rupestris* Smith, 1834.

12. Tail all brown. Bullae rather large, nearly 15 per cent. of occipitonasal length. *LEPUS MONTICULARIS* Thomas, 1903
(Deelfontein, Richmond Division, Cape Province. Thomas separated this species as *Bunolagus* in 1929. The tail colour is far too variable within the genus for this name to be given even subgeneric rank.)
Tail usually not all brown; in *sinensis*, blackish above seems to predominate, but the tail is mainly dull in the majority of specimens; in the *timidus* group, there is little or no black in the tail, in which whitish or white predominates above as a rule. In both species just mentioned, and *oiostolus*, bullae average smaller than in *L. monticularis*. ——13

13. Anterior notch in front of postorbital process reduced or becoming obsolete, as a rule. Occipitonasal length rarely exceeds 83 mm. *LEPUS SINENSIS*
(Forms examined: the typical, *coreanus*, *formosus*.)
Anterior notch in front of postorbital process usually clear. Occipitonasal length rarely under 85 mm. (Type and only available specimen of *illuteus* is an exception, but that has the anterior notch in front of postorbital process very well developed.) ——14

14. Tail usually less than half length of hindfoot. *LEPUS TIMIDUS*
(Forms examined: the typical, *hibernicus*, *ainu*, *varronis*, *scoticus*.)
Tail usually considerably more than half length of hindfoot. *LEPUS OIOSTOLUS*
(Forms examined: the typical, *hypsibius*, *kozlovi* and *illuteus*.)

15. Bullae unusually enlarged, on average 16 per cent., and more, of occipitonasal length. *LEPUS ARABICUS*
(Forms examined: the typical, from Southern Arabia; *a. craspedotis* (Baluchistan, specimens from Pangjur and Quetta; B.M. No. 5.10.4.66, Karun River, Persia, bearing this name is not authentic, probably *L. europaeus* subsp.); *a. omanensis* (Oman, Arabia); *a. whitakeri* (Libya only; B.M. specimens 12.11.14.71 and 12.11.14.70 bearing this name, from Algeria, are not authentic); and *a. cheesmani*, many specimens from several places in Arabia.)
The forms *omanensis* and *cheesmani* may be noted as among the smallest members of the genus in occipitonasal length, which averages about 70 mm. in both of these races. The other three are rather small (*capensis* group size), with occipitonasal length averaging about 76–82 mm.
Bullae smaller, on average less than 16 per cent. of occipitonasal length. ——16

16. Larger animals; always averaging larger in size of skull than members of the *capensis* group where the two occur together. South of the Sahara, occipitonasal length on average about 86 mm., and more. In the Palaearctic and Indian regions, occipitonasal length averages 88 mm. and more, more often over 90 mm. (*europaeus* group) ——17
Smaller animals; always on average smaller in skull size than members of the

europaeus group where the two occur together. South of the Sahara, occipitonasal length is on average 85 mm. and less. In Palaearctic and Indian regions, occipitonasal length on average normally 87 mm. and less.[1] (*capensis* group)
——20

17. Palate usually clearly longer than mesopterygoid space immediately behind it (over 110 per cent. on average). ——18
Palate averages shorter than mesopterygoid space immediately behind it, or only a little longer (under 110 per cent., with a few individual exceptions).
——19

18. Occipitonasal length on average about 89 mm. *LEPUS SIAMENSIS*
Occipitonasal length on average about 86 mm.
LEPUS WHYTEI Thomas, 1894 (from Nyasaland and Mozambique)

19. Either a black neck patch, or the upper part of the tail is normally brown and white (India). *LEPUS NIGRICOLLIS*
(Forms examined: the typical, *n. ruficaudatus*, *n. dayanus*, *n. simcoxi*, *n. mahadeva*, *n. singhala*, *n. rajput*.)
Upper part of the tail is normally black and white. A black neck patch was not noted in any of the races examined. *LEPUS EUROPAEUS*
(Forms examined: the typical, *e. hybridus*, *e. saxatilis* Cuvier, 1823, Cape of Good Hope (specimens from Transvaal, Natal, and Knysna, King Williams Town, Uitenhage, Deelfontein, all Cape Province); *e. caspicus*, *e. syriacus*, *e. microtis* Heuglin, 1865, Anglo-Egyptian Sudan; *e. judeae*, *e. tigrensis* Blanford, 1869, Abyssinia; *e. victoriae* Thomas, 1893, Tanganyika, Kenya, Uganda; *e. occidentalis*, *e. corsicanus*, *e. crawshayi* de Winton, 1899, Kenya; *e. transsylvanicus*, *e. creticus*, *e. cyprius*, *e. parnassius*, *e. megalotis* Thomas & Schwann, 1905, Little Namaqualand, *e. zuluensis* Thomas & Schwann, 1905, Zululand (specimens also from parts of Transvaal, and Southern Rhodesia); *e. cyrensis*, *e. meridiei*, *e. micklemi* Chubb, 1908, Bulawayo, Southern Rhodesia; *e. rhodius*, *e. connori*, *e. tesquorum*, *e. auranti* Thomas & Hinton, 1923, Louisvale, Middle Orange River, North Cape Province; *e. herero* Thomas, 1926, Ovamboland, South-West Africa; *e. chobiensis* Roberts, 1932, Chobe River, Bechuanaland; *e. ngamiensis* Roberts, 1932, Ngamiland, Bechuanaland). I am not sure of the status of *fagani* Thomas, 1903, Abyssinia. The skull is *europaeus* group size, but more specimens are required to show whether the colour of the tail is aberrant.

20. Palate normally exceeds width of mesopterygoid space immediately behind it.
——21
Palate normally shorter than mesopterygoid width immediately behind it (the sole exception is *capensis aquilo*, Portuguese East Africa, which averages a little shorter in palate length than *peguensis*; bullae distinctly smaller than *salae;* 11.5 mm. and less in *aquilo*, 12.7 mm. and more in *salae*). ——22

[1] Only one specimen available of *pamirensis* which is currently regarded as a race of *tolai* = *capensis*, but which is about small *europaeus* size (88½ mm. in occipitonasal length).

21. Bullae enlarged, 15 per cent. of occipitonasal length, and 12.7 mm. and more. *LEPUS SALAE* Jentink, 1880 (Angola)

Bullae smaller, 11.6 mm. and less. *LEPUS PEGUENSIS*

(Forms examined: the typical, *hainanus* and *vassali*. The allocation of *hainanus* to this species is provisional. The British Museum possesses only the type specimen, which is rather young, and smaller than measurements quoted in G. Allen, *Mamm. China & Mongolia*.) (B.M. No. 15.5.5.241, labelled *peguensis* from Yin, Chindwin, Burma, is more likely to represent *L. siamensis*.) I am not sure of the status of *crispi* Drake Brockman, 1911, Italian Somaliland, which has unusually large bullae but seems based on a young specimen. More material is required to ascertain the status of this form.

22. Occipitonasal length of skull approximates 73 mm. Bullae average 15 per cent. of occipitonasal length. *LEPUS ATLANTICUS*

(Retained as a species because it appears there is a strong possibility that this occurs with one of the other races of *L. capensis* as here understood. See Cabrera, 1932, Mammals of Morocco, *Trab. Mus. Nac. Cienc. Nat. Madrid, Zool.*, 57.)

Occipitonasal length of skull normally exceeds 73 mm. *LEPUS CAPENSIS*

(Forms examined: the typical (Linnaeus, 1758, Cape of Good Hope; specimens from near Cape Town); *c. tolai*, *c. aegyptius*, *c. isabellinus* Cretzschmar, 1826, Sudan; *c. habessinicus* Hemprich & Ehrenberg, 1832, Abyssinia; *c. sinaiticus*, *c. tibetanus*, *c. mediterraneus*, *c. ochropus* Wagner, 1844, Cape (High Veldt; specimens from Transvaal and Orange Free State); *c. granatensis*, *c. somalensis* Heuglin, 1861, Somaliland; *c. lehmanni*, *c. pamirensis*, *c. senegalensis* Rochebrune, 1883, Senegal; *c. swinhoei*, *c. schlumbergeri*, *c. kabylicus*, *c. pallidior*, *c. tunetae*, *c. zechi* Matschie, 1899 (*S.B. Ges. Nat. Fr. Berlin*, 11, from Kratyi, Togoland; omitted from G. Allen (1939)); *c. hawkeri* Thomas, 1901, Sudan; *c. rothschildi*, *c. harterti*, *c. centralis* Thomas, 1903, Deelfontein, Richmond Division, Cape Province, *c. granti* Thomas & Schwann, 1904, Little Namaqualand; *c. angolensis* Thomas, 1904, Angola (synonym: *ansorgei* Thomas & Wroughton, 1906, Angola, as indicated by Hill & Carter (1941); these authors refer *angolensis* as a subspecies to *saxatilis* = *europaeus*, but in British Museum material both *angolensis* and its synonym *ansorgei* are *capensis*-size); *c. sherif*, *c. maroccanus*, *c. aquilo* Thomas & Wroughton, 1907, Portuguese East Africa; *c. gallaecius*, *c. iturissius*, *c. centrasiaticus*, *c. filchneri*, *c. kalaharicus* Dollman, 1910, Bechuanaland; *c. cordeauxi* Drake Brockman, 1911, Abyssinia; *c. sefranus*, *c. abbotti* Hollister, 1918, Kenya; *c. canopus* Thomas & Hinton, 1921, Northern Nigeria; *c. buchariensis*, *c. mandatus* Thomas, 1926, Berseba, Great Namaqualand; *c. narranus* Thomas, 1926, Namib Desert, South-West Africa. The status of the form *przewalski*, tentatively included here, is uncertain; no measureable skulls are available. The forms *rainey* Heller, 1912, Kenya, and *chadensis* Thomas & Wroughton, 1907, Lake Chad, are not allocated; the latter may well be not certainly identifiable owing to paucity of material; measurable skulls for both are inadequate in the British Museum collection.)

Of those listed above, the following may be noted as having the largest bullae, on average 15 per cent. of the occipitonasal length: *isabellinus, habessinicus, pallidior, rothschildi, centralis, centrasiaticus, kalaharicus, cordeauxi, sefranus, mandatus, narranus, sinaiticus.*

Genus **LEPUS** Linnaeus, 1758

1758. *Lepus* Linnaeus, Syst. Nat. 10th ed. *1:* 57. *Lepus timidus* Linnaeus.
1829. *Chionobates* Kaup, Entw. Gesch. Natürl. Syst. Europ. Thierw. *1:* 170. *Lepus variabilis* Pallas and *Lepus borealis* Pallas, both = *Lepus timidus* Linnaeus.
1867. *Eulagos* Gray, Ann. Mag. N.H. *20:* 222. *Lepus mediterraneus* Wagner and *Lepus judeae* Gray. Type here selected as *mediterraneus.*
1899. *Eulepus* Acloque, Faune de France, Mamm. 52. *Lepus timidus* Linnaeus (G. Allen, 1939, Checklist African Mamm. 272).
1929. *Bunolagus* Thomas, P.Z.S. 109. *Lepus monticularis* Thomas, from Deelfontein, Cape Province.
1929. *Allolagus* Ognev, Zool. Anz. *84:* 71. *Lepus mandschuricus* Radde. Valid as a subgenus. Published 1 August 1929; not preoccupied by *Allolagus* Dice, 1929, J. Mamm. *10:* 342, *L. annectens* Schlosser, published November.
1947. *Tarimolagus* Gureev, C.R. Acad. Sci. U.R.S.S. *57,* 5: 517, fig. 2. *Lepus yarkandensis* Günther. Valid as a subgenus.

12 species in the area covered by this list:

Lepus arabicus, page 434
Lepus atlanticus, page 433
Lepus brachyurus, page 442
Lepus capensis, page 429
Lepus europaeus, page 434
Lepus nigricollis, page 437
Lepus oiostolus, page 441
Lepus peguensis, page 433
Lepus siamensis, page 437
Lepus sinensis, page 441
Lepus timidus, page 438
Lepus yarkandensis, page 443

Subgenus *LEPUS* Linnaeus, 1758

Lepus capensis group

Lepus capensis Linnaeus, 1758 — Cape Hare; Tolai Hare

Approximate distribution of species: Africa, widely distributed, from Cape Province (south to Cape Town neighbourhood, Deelfontein and Albany districts), northwards to Angola and the Congo, through East Africa to Sudan and Somaliland, thence westwards to Northern Nigeria and Senegal; Morocco, west to Rio de Oro, Algeria, Tunis, Egypt; Spain, Portugal, Sardinia; Sinai, Palestine, Afghanistan, Persia; Kashmir, North-West Frontier; Transbaikalia, and the whole of Russian Central Asia and Kazakstan as far north as a line from Lake Zaisan through Lake Balkash and the north coast of Sea of Aral to Manguishlak (Bobrinskii); and including Altai (Chuiskaya steppes); Mongolia, Chinese Turkestan, and China from Shantung and Chihli to Shensi and Shansi, south to Szechuan, Anhwei and Hupeh.

LEPUS CAPENSIS CAPENSIS Linnaeus, 1758. Extralimital)

1758. *Lepus capensis* Linnaeus, Syst. Nat. 10th ed. *1:* 58. Cape of Good Hope.

LEPUS CAPENSIS TOLAI Pallas, 1778

1778. *Lepus tolai* Pallas, Nov. Spec. Quad. Glir. Ord. 17. Adinscholo Mountain, near Tchinden, on Borsja River, a tributary of the Onon River, Eastern Siberia.
1882. *Lepus butlerowi* Bogdanov, Outlines N.H. Khivinsk, 67, 80, *nom. nud.* (*N.V.*)
1882. *Lepus kessleri* Bogdanov, *loc. cit.*, *nom. nud.* (*N.V.*)
1907. *Lepus gansuicus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *1906, 11:* 160. Myn-dan-scha, Kansu, China.
1907. *Lepus gobicus* Satunin, *loc. cit.* 164. Gobi Desert, Mongolia.
1908. *Lepus swinhoei subluteus* Thomas, Abstr. P.Z.S. 45; 1909, P.Z.S. *1908:* 979. Ordos Desert, north of Ching-pien, 4,900 ft. Southern Gobi, in Northern Shensi.

Range: Mongolia, Transbaikalia, Kansu.

LEPUS CAPENSIS AEGYPTIUS Desmarest, 1822

1822. *Lepus aegyptius* Desmarest, Encyclop. Méth. Mamm. *2:* 350. Egypt.
1833. *Lepus aethiopicus* Ehrenberg, Symb. Phys. Mamm. *2: sig.* n, 2, pl. 13. Nubia and Dongola, Upper Nile.

Range: Egypt, Sudan, and Palestine according to Bodenheimer.

LEPUS CAPENSIS SINAITICUS Ehrenberg, 1833

1833. *Lepus sinaiticus* Ehrenberg, Symb. Phys. Mamm. *2: sig.* t (pl. 14, fig. 1). Near Mt. Sinai. Range includes Midian, North-Western Arabia (B.M.).

LEPUS CAPENSIS TIBETANUS Waterhouse, 1841

1841. *Lepus tibetanus* Waterhouse, P.Z.S. 7. Upper Indus Valley, Little Tibet (= Baltistan), Kashmir.
(?) 1877. *Lepus biddulphi* Blanford, J. Asiat. Soc. Bengal, *46*, 2: 324. Yassin, Gilgit, Kashmir.

Range: Afghanistan (B.M.), Kashmir, North-West Frontier.

LEPUS CAPENSIS MEDITERRANEUS Wagner, 1841

1841. *Lepus mediterraneus* Wagner, Gelehrt. Anzeiger Münch, *12:* 439. Sardinia.
1906. *Lepus mediterraneus typicus* Hilzheimer, Zool. Anz. *30:* 512. Sardinia.

LEPUS CAPENSIS GRANATENSIS Rosenhauer, 1856

1856. *Lepus granatensis* Rosenhauer, Die Thiere Andalusiens, 3. Granada, Spain.
1867. *Lepus hispanicus* Fitzinger, S.B. Akad. Wiss. Wien, *56*, 1: 161. Substitute for *granatensis*.
1897. *Lepus meridionalis* Graells, Mem. R. Acad. Madrid, *17:* 525. Vicinity of Madrid, Spain.
1898. *Lepus lilfordi* de Winton, Ann. Mag. N.H. *1:* 153. Seville, Spain.

Range: greater portion of Spain, extending from Province of Burgos to south and east coasts; Portugal; Balearic Islands.

LEPUS CAPENSIS LEHMANNI Severtzov, 1873

1873. *Lepus lehmanni* Severtzov, Mém. Soc. Amis. Sci. Moscou, *8*, 2: 62, 83. See also Ann. Mag. N.H. 1876, *18:* 169. Lower Amu Darya, Russian Turkestan.

1861. *Lepus aralensis* Severtzov, Acclimatization, *2*, 2: 49–70, *nom. nud.* (*N.V.*)

Range: Kirghizia, Fergana Valley, Tashkent Oasis in Usbekistan, Kara-Kalpakiya, Southern Kazakstan. British Museum specimens from Djarkent and Persia.

LEPUS CAPENSIS PAMIRENSIS Günther, 1875

1875. *Lepus pamirensis* Günther, Ann. Nat. Hist. *16:* 229. Near Lake Sarui-Kul, Pamir Mountains.

LEPUS (?) CAPENSIS STOLICZKANUS Blanford, 1875

1875. *Lepus stoliczkanus* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 110. Jigda, Altum Artush district, north-east of Kashgar, Chinese Turkestan.

LEPUS CAPENSIS SWINHOEI Thomas, 1894

1894. *Lepus swinhoei* Thomas, Ann. Mag. N.H. *13:* 364. Chefoo, Shantung, China.

1907. *Lepus stegmanni* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 221. Kiauchow, near Tsingtao, Shantung, China.

Range: Chihli, Shantung, Anhwei, in Eastern China.

LEPUS CAPENSIS SCHLUMBERGERI Saint-Loup, 1894

1894. *Lepus schlumbergeri* Saint-Loup, Bull. Soc. Zool. France, *19:* 168. Yerk-el-Acaab, El Fahs, Morocco.

LEPUS CAPENSIS KABYLICUS de Winton, 1898

1898. *Lepus kabylicus* de Winton, Ann. Mag. N.H. *1:* 155. Algiers, Algeria.

LEPUS CAPENSIS TUNETAE de Winton, 1898

1898. *Lepus tunetae* de Winton, Ann. Mag. N.H. *1:* 157. Tunis.

LEPUS CAPENSIS PALLIDIOR Barrett-Hamilton, 1898

1898. *Lepus pallidior* Barrett-Hamilton, Ann. Mag. N.H. *2:* 422. Aures Mountains, near Biskra, Algeria.

LEPUS CAPENSIS ROTHSCHILDI de Winton, 1902

1902. *Lepus rothschildi* de Winton, Novit. Zool. *9:* 444. Giza Province, Egypt.

1902. *Lepus innesi* de Winton, Novit. Zool. *9:* 445. Gattah, Fayum Province, Egypt.

LEPUS CAPENSIS HARTERTI Thomas, 1903

1903. *Lepus harterti* Thomas, Novit. Zool. *10:* 301. Rio de Oro, North-West Africa.

LEPUS CAPENSIS SHERIF Cabrera, 1906

1906. *Lepus sherif* Cabrera, Bol. Soc. Esp. Hist. Nat. *6:* 366. Mogador, Morocco.

LEPUS CAPENSIS MAROCCANUS Cabrera, 1907

1907. *Lepus maroccanus* Cabrera, Bol. Soc. Esp. Hist. Nat. *7:* 178. Marrakesh, 1,460 ft., Morocco.

LEPUS CAPENSIS GALLAECIUS Miller, 1907

1907. *Lepus granatensis gallaecius* Miller, Ann. Mag. N.H. *20:* 400. La Coruña, Province of Coruña, Spain.

LEPUS CAPENSIS ITURISSIUS Miller, 1907

1907. *Lepus granatensis iturissius* Miller, Ann. Mag. N.H. *20:* 401. Basses-Pyrénées, near Biarritz, France (probably the Spanish side of the border).

LEPUS CAPENSIS PRZEWALSKII Satunin, 1907

1907. *Lepus przewalskii* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *1906*, 11: 156. Southern Tsaidam (North-Eastern Tibet).

LEPUS CAPENSIS KASCHGARICUS Satunin, 1907

1907. *Lepus kaschgaricus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *1906*, 11: 157. Yarkand Oasis, Kashgar, Chinese Turkestan.

The last two named forms were based on certain specimens which Buchner, 1894, referred to *Lepus tolai*.

LEPUS CAPENSIS CENTRASIATICUS Satunin, 1907

1907. *Lepus centrasiaticus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *1906*, 11: 158. Sachow, Western Kansu, China.

LEPUS CAPENSIS ZAISANICUS Satunin, 1907

1907. *Lepus zaisanicus* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *1906*, 11: 161. Near Lake Saissan, east of Lake Balkash, Russian Asia.

LEPUS CAPENSIS FILCHNERI Matschie, 1907

1907. *Lepus filchneri* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 217. Hinganfu, Southern Shensi, China.

1909. *Lepus swinhoei brevinasus* J. Allen, Bull. Amer. Mus. N.H. *26:* 427. Tai-pa-shan, south of Tsinling, north of Hinganfu, Shensi, China.

1912. *Lepus swinhoei sowerbyae* Hollister, Proc. Biol. Soc. Washington, *25:* 182. Wu-tsai, 20 miles west of Ningwufu, Northern Shansi, China.

Range: Shensi and Shansi, China.

LEPUS CAPENSIS AURIGINEUS Hollister, 1912

1912. *Lepus aurigineus* Hollister, Proc. Biol. Soc. Washington, *25:* 181. Kiukiang, Northern Kiangsi, South-Eastern China. Range: westwards to Hupeh and Szechuan.

LEPUS CAPENSIS QUERCERUS Hollister, 1912

1912. *Lepus quercerus* Hollister, Proc. Biol. Soc. Washington, *25:* 182. Chuiskaya Steppes, Altai Mountains, Siberia.

LEPUS CAPENSIS SEFRANUS Thomas, 1913

1913. *Lepus sefranus* Thomas, Novit. Zool. *20:* 590. Ain Sefra, Algeria. Ranges into extreme South-Eastern Morocco.

Lepus capensis buchariensis Ognev, 1922

1922. *Lepus tolai buchariensis* Ognev, Ann. Mus. Zool. Petrograd, *23:* 475. Khatuin-Rabat, east of Termez, Russian Turkestan.

Lepus capensis pediaeus Cabrera, 1923

1923. *Lepus schlumbergeri pediaeus* Cabrera, Bol. Soc. Esp. Hist. Nat. *23:* 332. Ayeddin, Kebdana, Eastern Rif, Morocco.

Lepus capensis desertorum Ognev & Heptner, 1928

1928. *Lepus tolai desertorum* Ognev & Heptner, Zool. Anz. *75:* 262. Station Annau, near Ashabad, Turkmenia.

Lepus capensis turcomanus Heptner, 1934

1934. *Lepus europaeus turcomanus* Heptner, Folia Zool. Hydrobiol. *6:* 21. Sixty kilometres north of Dzhebel, east of Krasnovodsk, Turkmenia.

Lepus capensis cinnamomeus H. Smith, 1940

1940. *Lepus europaeus cinnamomeus* H. Smith, J. Mamm. *21:* 77. Suifu, Szechuan, China.

(N.B.—*Lepus capensis isabellinus* Cretzschmar, 1826 (described as *Lepus isabellinus*, *Rüpp. Atlas Reise nordl. Afrika, Säugeth.* 52, pl. 20, deserts south-west of Ambukol, Anglo-Egyptian Sudan) has once been recorded from Palestine, but I feel at liberty to doubt its occurrence there. The only skulls from Palestine I have seen represent a form of *Lepus arabicus*, or belong to *L. europaeus*.)

Lepus atlanticus de Winton, 1898 Lesser Moroccan Hare

Approximate distribution of species: Morocco.

Lepus atlanticus de Winton, 1898

1898. *Lepus atlanticus* de Winton, P.Z.S. *1897:* 960, text figs. 3, 5. Ras-el-ain, in Hahá, Morocco.

Lepus peguensis Blyth, 1855 Burmese Hare

Approximate distribution of species: Burma, Indo-China, Hainan.

Lepus peguensis peguensis Blyth, 1855

1855. *Lepus peguensis* Blyth, J. Asiat. Soc. Bengal, *24:* 471. Upper Pegu, Burma. Range: Burma; Rangoon, Pegu, Mt. Poppa.

Lepus (?) peguensis hainanus Swinhoe, 1870

1870. *Lepus hainanus* Swinhoe, P.Z.S. 233, pl. 18, text figs. 1–4. Hainan.

Lepus peguensis vassali Thomas, 1906

1906. *Lepus vassali* Thomas, Ann. Mag. N.H. *17:* 425. Nhatrang, Annam, Indo-China. Range includes Cambodia, Cochin-China. A distinct, rather small form.

Lepus arabicus Ehrenberg, 1833 Arabian Hare

Approximate distribution of species: Arabia, Palestine; Baluchistan; Libya.

Lepus arabicus arabicus Ehrenberg, 1833

1833. *Lepus arabicus* Ehrenberg, Symb. Phys. Mamm. *2: sig.* r. Qunfidha, (19° N., 41° E.), Arabia. Specimens examined from Yemen, Aden district, and Kuwait in Arabia.

Lepus arabicus craspedotis Blanford, 1875

1875. *Lepus craspedotis* Blanford, Ann. Mag. N.H. *16:* 313. Pishin, Baluchistan.

Lepus arabicus omanensis Thomas, 1894

1894. *Lepus omanensis* Thomas, P.Z.S. 450. Ziki, Oman, Eastern Arabia.

Lepus arabicus whitakeri Thomas, 1902

1902. *Lepus whitakeri* Thomas, P.Z.S. *2:* 12, pl. 1. Wadi Agarib, north-west of Sokna, Libya.

Lepus (?) arabicus barcaeus Ghigi, 1920

1920. *Lepus barcaeus* Ghigi, Mem. R. Accad. Bologna, *7*, 7: 81. Woods of Frejna, near Merj, Cyrenaica, Libya.

Lepus arabicus cheesmani Thomas, 1921

1921. *Lepus omanensis cheesmani* Thomas, J. Bombay N.H. Soc. *28:* 28. Dohat al Salwa, south of Bahrein Island, Arabia. Specimens examined from the type locality, Jabrin, Zedila, Hadida, Ain Sala and Shanna, Arabia.

In addition, a large skull from Palestine in the British Museum collection apparently represents this species.

Lepus europaeus group.

Lepus europaeus Pallas, 1778 European Hare

Approximate distribution of species: Britain, France, south to Pyrenees, Belgium, Holland, Denmark, Germany, Switzerland, Italy, to Yugoslavia, Poland, Rumania, Greece, Crete, Sicily, Corsica. The whole of European Russia, "north as far as a line running from Central Karelia through Archangel and Kotlas to Cherduin", Transcaucasia, "and is gradually occupying the steppes of Transuralia and North-Western Kazakstan" (Bobrinskii). Asia Minor, Persia, Iraq, Cyprus, Palestine and Syria. From Abyssinia and Sudan southwards approximately to districts of Knysna, King Williams Town and Cape Peninsula, in Cape Province.

Lepus europaeus europaeus Pallas, 1778

1778. *Lepus europaeus* Pallas, Nov. Sp. Quad. Glir. Ord. 30. Burgundy, France.
1801. *Lepus timidus alba* Bechstein, Gemeinn. Naturgesch. Deutschlands, 2nd ed. *1:* 1096. Thuringia, Germany.
1801. *Lepus timidus flavus* Bechstein, *loc. cit.* 1096. Thuringia, Germany.

1801. *Lepus timidus niger* Bechstein, *loc. cit.* 1097. Thuringia, Germany.
1820. *Lepus medius* Nilsson, Skand. Fauna, *1:* 224. Zealand, Denmark.
(?) 1859. *Lepus campicola* Gervais, Zool. et Paléont. Françaises, 2nd ed. 47. *Nom. nud.*, based on Common Hare of France.
(?) 1867. *Lepus timidus coronatus* Fitzinger, S.B. Akad. Wiss. Wien, *56:* 161. Austria. *Nom. nud.*
(?) 1867. *Lepus timidus rufus* Fitzinger, *loc. cit.* Austria. *Nom. nud.*
(?) 1867. *Lepus timidus cinereus* Fitzinger, *loc. cit.* Austria. *Nom. nud.*
(?) 1867. *Lepus timidus nigricans* Fitzinger, *loc. cit. Nom. nud.*
(?) 1867. *Lepus timidus maculatus* Fitzinger, *loc. cit. Nom. nud.*
1875. *Lepus timidus* var. *argenteogrisea* König-Warthausen, Wurtt. nat. Jahreshaft, *31:* 277. Ulm, Württemberg, Germany.
(?) 1906. *Lepus europaeus karpathorum* Hilzheimer, Zool. Anz. *30:* 512. Carpathian Mountains.

Range: Denmark, Belgium, France, Germany, Austria, Switzerland, Estonia.

Lepus europaeus hybridus Desmarest, 1822

1822. *Lepus hybridus* Desmarest, Mammalogie, *2:* 349. Former Moscow Govt., Central Russia. Ognev quotes *hybrida* of Pallas (1811, Zoogr. Ross. As. 147), but this was not a name at all.
1842. *Lepus aquilonius* Blasius, Amtl. Bericht xix Versamml. Naturf. u. Aertze, Braunschweig, 89. Central Russia.
1850. *Lepus timidus* var. *hyemalis* Tumac, N.H. Orenburg Regn, *2*, Kazan, 201. (*N.V.*)
1889. *Lepus timidus* var. *tumak* Tichomirov & Kortchagin, Bull. Soc. Amis. Sci. Nat. Moscou, *56*, 4: 31. Moscow Govt., Russia.

Range: Western and Central Russia, Lithuania, Eastern Germany.

Lepus europaeus syriacus Ehrenberg, 1833

1833. *Lepus syriacus* Ehrenberg, Symb. Phys. Mamm. *2:* sig. u. Mt. Lebanon, Syria. This, or an allied form, occurs in Asia Minor, north to Trebizond region (B.M.).

Lepus europaeus caspicus Ehrenberg, 1833

1833. *Lepus caspicus* Ehrenberg, Symb. Phys. *2:* sig. y. Near Astrakhan, Russia.
1929. *Lepus europaeus caspius kalmykorum* Ognev, Zool. Anz. *84:* 77. Kalmyken Steppe, Russia.

Range: Lower Volga, Kalmykia, Western Kazakstan.

Lepus europaeus judeae Gray, 1867

1867. *Lepus judeae* Gray, Ann. N.H. *20:* 222. Palestine.

Lepus europaeus occidentalis de Winton, 1898

1898. *Lepus europaeus occidentalis* de Winton, Ann. Mag. N.H. *1:* 152. Moorhampton, Herefordshire, England. Range: England and Wales, the Isle of Man and the Lowlands of Scotland, the Orkney and Shetland Islands; introduced in Ireland, also Switzerland (Miller).

LEPUS EUROPAEUS CORSICANUS de Winton, 1898

1898. *Lepus corsicanus* de Winton, Ann. Mag. N.H. *1:* 155. Bastia, Corsica. Range: to Sicily and Italy.

LEPUS EUROPAEUS TRANSSYLVANICUS Matschie, 1901

1901. *Lepus transsylvanicus* Matschie, S.B. Ges. Nat. Fr. Berlin, 236. Taslau, Rumania.
1906. *Lepus europaeus transsylvaticus* Hilzheimer, Zool. Anz. *30:* 512.
Range: Rumania, Yugoslavia, Greece, Crimea, Southern Ukraine.

LEPUS EUROPAEUS CRETICUS Barrett-Hamilton, 1903

1903. *Lepus creticus* Barrett-Hamilton, Ann. Mag. N.H. *11:* 126. Crete (and Cephalonia).

LEPUS EUROPAEUS CYPRIUS Barrett-Hamilton, 1903

1903. *Lepus cyprius* Barrett-Hamilton, Ann. Mag. N.H. *11:* 127. Cyprus.

LEPUS EUROPAEUS PARNASSIUS Miller, 1903

1903. *Lepus parnassius* Miller, Proc. Biol. Soc. Washington, *16:* 145. Agorianni, north side of Lyakupa (Parnassus) Mountains, Greece.

LEPUS EUROPAEUS CYRENSIS Satunin, 1905

1905. *Lepus cyrensis* Satunin, Mitt. Kauk. Mus. *2*, 1: 60, 79. Barda, Elisabetpol Gouv., Azerbaijan, Transcaucasia.

LEPUS EUROPAEUS PYRENAICUS Hilzheimer, 1906

1906. *Lepus europaeus pyrenaicus* Hilzheimer, Zool. Anz. *30:* 512. Bagnères, Pyrenees, France.

LEPUS EUROPAEUS MERIDIEI Hilzheimer, 1906

(?) 1859. *Lepus meridionalis* Gervais, Zool. et Pal. Françaises, 2nd ed.: 47, *nom. nud.*
1906. *Lepus europaeus meridiei* Hilzheimer, Zool. Anz. *30:* 512. Department of Aveyron, France.
Range: France (South-Eastern and South-Central), Northern Italy, Corfu.

LEPUS EUROPAEUS RHODIUS Festa, 1914

1914. *Lepus europaeus rhodius* Festa, Boll. Mus. Zool. Anat. Comp. Torino, *29*, 686: 9. Island of Rhodes, Eastern Mediterranean.

LEPUS EUROPAEUS CONNORI Robinson, 1918

1918. *Lepus dayanus connori* Robinson, Rec. Ind. Mus. Calcutta, *15:* 49. Karun River, between Ahwaz and Mohammerah, Persia. Two specimens examined from the type locality and Iraq suggest that this is not *dayanus* = *nigricollis*, but a smallish form of *europaeus*.

LEPUS EUROPAEUS TESQUORUM Ognev & Worobiev, 1923

1923. *Lepus europaeus tesquorum* Ognev & Worobiev, Fauna of Terrestrial Vertebrates of Govt. of Voronej, 115. Dokuchaerskaya Experimental Station, Kammenaya Steppe, Bobrovsk division, Voronej Govt., Russia. Range: Ukraine, except extreme south, Kursk, Orlovsk, Voronej, Tambov Provinces, Russia.

Lepus europaeus ghigii de Beaux, 1927

1927. *Lepus europaeus ghigii* de Beaux, Boll. Mus. Zool. Anat. Comp. Genova, *7*, 17: 1. Stampalia Island, Aegean Sea.

Lepus europaeus caucasicus Ognev, 1929

1929. *Lepus europaeus caucasicus* Ognev, Zool. Anz. *84:* 75. Neighbourhood of Vladikavkaz (Ordzhonikidze), Northern Caucasus, Russia.

1929. *Lepus europaeus caucasicus ponticus* Ognev, Zool. Anz. *84:* 75. Black Sea coast, Russia.

Lepus europaeus niethammeri Wettstein, 1943

1943. *Lepus europaeus niethammeri* Wettstein, Zool. Anz. *143:* 282. Vytina, Peloponnesus, 1,000 m., Southern Greece.

Lepus europaeus biarmicus Heptner, 1948

(?) 1871. *Lepus campestris* Bogdanov, Birds & Mammals of Black-Earth deposits of Povolzh'e, 175–176. (*N.V.*) Not of Bachman, 1837.

1944. *Lepus europaeus borealis* Kuznetzov, Mammals of U.S.S.R., Moscow, 271. Northern Bashkiria, Russia. Not of Pallas, 1778, and Nilsson, 1820.

1948. *Lepus europaeus biarmicus* Heptner, C.R. Acad. Sci. Moscow, *60:* 709. To replace *borealis* Kuznetzov, preoccupied.

Range: Vologda Province, Kirov Province, Bashkiria, Tatary, Russia.

Lepus siamensis Bonhote, 1902 Siamese Hare

Approximate distribution of species: Siam, Laos in Indo-China, and Burma (Bhamo and probably Yin, Chindwin).

Lepus siamensis Bonhote, 1902

1902. *Lepus siamensis* Bonhote, P.Z.S. *2:* 40. Chiengmai, Siam. Range as above.

Lepus nigricollis Cuvier, 1823 Indian Hare; Black-naped Hare

Approximate distribution of species: Ceylon, Peninsular India northwards to Punjab, Sind, Cutch, Kathiawar, Nepal, Sikkim, Bhutan Duars, North Kamrup (Assam). ? Introduced in Java.

Lepus nigricollis nigricollis F. Cuvier, 1823

1823. *Lepus nigricollis* F. Cuvier, Dict. Sci. Nat. *26:* 307. Madras, India. Range: Peninsular India, south of the Godavari. Specimens examined from Western and Eastern Ghats, Poona, Coorg, Ratnagiri, Salem, Nilgiri Hills, Kanara, Bellary, Madras, Dharwar.

Lepus nigricollis ruficaudatus Geoffroy, 1826

1826. *Lepus ruficaudatus* Geoffroy, Dict. Class. H.N. *9:* 381. Bengal.

1840. *Lepus macrotus* Hodgson, J. Asiat. Soc. Bengal, *9:* 1183. Gangetic Plain, India.

Lepus nigricollis ruficaudatus [*contd.*]

1844. *Lepus aryabertensis* Hodgson, Calcutta J.N.H. *4:* 293. Madhyades, Nepal.
1854. *Lepus tytleri* Tytler, Ann. Mag. N.H. *14:* 176. Dacca, Eastern Bengal.

Range: Orissa, Bengal, Gwalior, Kumaon, Nepal, Sikkim, Bhutan Duars, Northern Kamrup, Central India, Rajputana.

Lepus nigricollis dayanus Blanford, 1874

1874. *Lepus dayanus* Blanford, P.Z.S. 663. Sukkur, Sind, India.
1884. *Lepus joongshaiensis* Murray, Vert. Zool. of Sind, 51. Joongshai, Sind.

Range: Sind, Cutch, Palanpur, Kathiawar to Mt. Abu, Rajputana, and possibly to Salt Range, Punjab (whence I have examined one not very typical specimen).

Lepus nigricollis simcoxi Wroughton, 1912

1912. *Lepus simcoxi* Wroughton, J. Bombay N.H. Soc. *21:* 338. Edalabad, Khandesh, India. Range includes Nimar, Berar and Central Provinces, India.

Lepus nigricollis mahadeva Wroughton & Ryley, 1913

1913. *Lepus mahadeva* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 15. Dhaim, Mahadeo Hills, Central Provinces, 2,300 ft., India. Range: Hoshangabad and Central Provinces, India, in part, but not occurring with the last as far as ascertained. An aberrant form, with the palate tending to be a little longer than the mesopterygoid width just behind it.

Lepus nigricollis singhala Wroughton, 1915

1915. *Lepus nigricollis singhala* Wroughton, J. Bombay N.H. Soc. *24:* 42. Kumbukkan, Ceylon.

Lepus nigricollis rajput Wroughton, 1917

1917. *Lepus rajput* Wroughton, J. Bombay N.H. Soc. *25:* 361. Sambhar Lake, Rajputana, India. (Only the type skull available. It is aberrant, and not very typical of the species.)

Lepus (?) nigricollis cutchensis Kloss, 1918

1918. *Lepus cutchensis* Kloss, Rec. Ind. Mus. Calcutta, *15:* 91. Bhuj, Cutch, India.

Lepus timidus group

Lepus timidus Linnaeus, 1758 Blue, Mountain, or Varying Hare

Approximate distribution of species: Ireland, Scotland; French, Swiss and Italian Alps, Norway and Sweden; Finland, Poland, the tundra, forest and greater part of the forest steppe zone of Russia and Siberia (north to the coast of the Arctic Ocean, east to the Pacific coast, including Sakhalin and Kamtchatka; in the south it reaches a line approximately through Belovezh, Kiev, Kharkov, Voronezh, Kamuishin, Chlakov, Aktyubinsk, Karaganda, Lake Balkash and the Dzhungar Alatau (Bobrinskii)). Mongolia (Bobrinskii), Manchuria, and Hokkaido in Japan. Probably also in North America.

Lepus timidus timidus Linnaeus, 1758

1758. *Lepus timidus* Linnaeus, Syst. Nat. 10th ed. *1:* 57. Upsala, Sweden.
1777. *Lepus timidus alpinus* Erxleben, Syst. Regn. Anim. *1:* 328. Not of Pallas, 1773.
1778. *Lepus variabilis* Pallas, Nov. Sp. Quad. Glir. Ord. 2. Renaming of *timidus.*
1778. *Lepus algidus* Pallas, Nov. Sp. Quad. Glir. Ord. 2. Alternative for *alpinus* Pennant.
1778. *Lepus borealis* Pallas, *loc. cit.* Alternative for *alpinus* Pennant.
1795. *Lepus septentrionalis* Link, Beytr. zur Naturgesch. *1,* 2: 73. Substitute for *variabilis.*
1831. *Lepus borealis collinus* Nilsson, Illum. Fig. Skand. Fauna, *1:* page opposite pl. 19. Södermanland, Sweden.
1831. *Lepus borealis sylvaticus* Nilsson, Illum. Fig. Skand. Fauna, *1:* page opposite pl. 22. Heavily wooded portions of Sweden.
(?) 1842. *Lepus sclavonius* Blyth, J. Asiat. Soc. Bengal, *11:* 102. "Skins from dealers in London, labelled Polish or Russian rabbit. A varying hare, possibly = *Lepus hybridus* of Pallas."
1844. *Lepus canescens* Nilsson, K. Vetensk. Ak. Handl. Stockholm, *1:* 133. Renaming of *sylvaticus.*
1900. *Lepus timidus typicus* Barrett-Hamilton, P.Z.S. 88.

Range: Norway, Sweden, Northern Russia, Estonia.

Lepus timidus hibernicus Bell, 1837

1837. *Lepus hibernicus* Bell, History of Brit. Quadrupeds, 341. Ireland.
1900. *Lepus timidus lutescens* Barrett-Hamilton, P.Z.S. 89. Donobate, Co. Dublin, Ireland. (Introduced into Scotland and Wales.)

Lepus timidus tschuktschorum Nordquist, 1883

1883. *Lepus timidus tschuktschorum* Nordquist, Vega Exped. *2:* 84, figs. 8–10. Pitlekaj, 67° N., 173° E., in North-Eastern Siberia.

Lepus timidus lugubris Kastschenko, 1899

1899. *Lepus timidus lugubris* Kastschenko, Trans. Tomsk. Univ. 57. Altai Mountains.
(?) 1900. *Lepus timidus altaicus* Barrett-Hamilton, P.Z.S. 90. (1843, Gray, List Mamm. 126, *nom. nud.*) Ongudai, on River Katun, about 200 versts south of Bijsk, Siberian Altai Mountains.

Lepus timidus ainu Barrett-Hamilton, 1900

1900. *Lepus timidus ainu* Barrett-Hamilton, P.Z.S. 90. Hokkaido, Japan.

Lepus timidus varronis Miller, 1901

1901. *Lepus varronis* Miller, Proc. Biol. Soc. Washington, *14:* 97. Heinzenberg, Grisons, Switzerland.
1906. *Lepus medius breviauritus* Hilzheimer, Zool. Anz. *30:* 511. Bernese Alps, Switzerland.

Range: French, Swiss, Italian Alps.

LEPUS TIMIDUS GICHIGANUS J. Allen, 1903

1903. *Lepus gichiganus* J. Allen, Bull. Amer. Mus. N.H. *19:* 155. Gichiga, west coast Okhotsk Sea, Eastern Siberia.

(?) 1922. *Lepus kamtschaticus* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 354. Kamtchatka, *nom. nud.*

LEPUS TIMIDUS SCOTICUS Hilzheimer, 1906

(?) 1816. *Lepus albus* Leach, Syst. Cat. Spec. Indig. Mamm. & Birds B.M. 7, *nom. nud.* Not of Bechstein, 1801.

1906. *Lepus medius scoticus* Hilzheimer, Zool. Anz. *30:* 511. Northern Scotland.

Range: Highlands of Scotland, range now extended by artificial introduction irregularly into Wales and Northern England, also in Ireland.

LEPUS TIMIDUS KOLYMENSIS Ognev, 1923

1923. *Lepus timidus kolymensis* Ognev, Biol. Mitt. Timiriazeff, *1:* 106. Nizhne Kolymsk (River Kolyma), Eastern Siberia.

LEPUS TIMIDUS SIBIRICORUM Johanssen, 1923

1923. *Lepus timidus sibiricorum* Johanssen, Trans. Tomsk Univ. *72:* 59. Novokusk, River Chulim, Tomsk district, Siberia. Range: plains of Western Siberia and Northern Kazakstan.

LEPUS TIMIDUS ORII Kuroda, 1928

1928. *Lepus timidus orii* Kuroda, J. Mamm. *9:* 223. Nayoro, Tomarioro, Sakhalin Island.

1931. *Lepus timidus saghaliensis* Abe, J. Sci. Hiroshima Univ. Zool. *1*, 4: 49. Near Otomari, Sakhalin.

1935. *Lepus gichiganus rubustus* (sic) Urita, Karafuto Dobuts. ni Kansuru Bunkan, 16. Sakhalin, *nom. nud.* (*M.V.*)

LEPUS TIMIDUS KOZHEVNIKOVI Ognev, 1929

1929. *Lepus timidus kozhevnikovi* Ognev, Zool. Anz. *84:* 79. Near Bogorodsk, Moscow Province, Russia. Range: Central Russia.

LEPUS TIMIDUS TRANSBAICALICUS Ognev, 1929

1929. *Lepus timidus transbaicalicus* Ognev, Zool. Anz. *84:* 81. Sosnowka, Bargusin Taiga, Lake Baikal. Range: Transbaikalia.

LEPUS TIMIDUS MORDENI Goodwin, 1933

1933. *Lepus timidus mordeni* Goodwin, Amer. Mus. Nov. No. 681, 15. River Monoma, Eastern Siberia. Range: Ussuri region and Amur region.

LEPUS TIMIDUS BEGITSCHEVI Koljuschev, 1936

1936. *Lepus timidus begitschevi* Koljuschev, Trans. Inst. Sci. Biol. Tomsk, *2:* 304. West coast Pyasina Bay, Taimour Peninsula, Northern Siberia.

LEPUS TIMIDUS ABEI Kuroda, 1938

1938. *Lepus timidus abei* Kuroda, List Japanese Mamm. 42. Toshimoi, in Yetorofu, Kurile Islands.

Lepus oiostolus Hodgson, 1840 Woolly Hare

Approximate distribution of species: Tibet, Kansu, Szechuan, Yunnan, in China; Kashmir, Nepal and Sikkim.

Lepus oiostolus oiostolus Hodgson, 1840

1840. *Lepus oiostolus* Hodgson, J. Asiat. Soc. Bengal, *9:* 1186. Type "from some unknown locality in Southern Tibet" (or Nepal, cf. Wroughton).

1842. *Lepus pallipes* Hodgson, J. Asiat. Soc. Bengal, *11:* 288. Utsang, Eastern Tibet.

(?) 1847. *Lepus oemodias* Gray, Cat Hodgson Coll. 21.

1899. *Lepus sechuenensis* de Winton, P.Z.S. 576, pl. 32. Dunpi, North-Western Szechuan, China.

Range: Tibet, Kansu, Szechuan, Nepal, Sikkim, Ladak, Upper Indus Valley.

Lepus oistolus hypsibius Blanford, 1875

1875. *Lepus hypsibius* Blanford, J. Asiat. Soc. Bengal, *44,* 2: 214. Kium, Changchenmo Valley, 15,000 ft., Ladak. Range: Ladak, not below 14,000 ft. according to Blanford, and Upper Sutlej Valley.

Lepus oistolus kozlovi Satunin, 1907

1907. *Lepus kozlovi* Satunin, Ann. Mus. Zool. Acad. St. Pétersb. *11:* 162 Retschu River, Kam, South-Eastern Tibet. Specimen examined from near Tatsienlu, Szechuan. G. Allen thought it might be a synonym of *oiostolus.*

Lepus oiostolus tsaidamensis Hilzheimer, 1910

1910. *Lepus oiostolus tsaidamensis* Hilzheimer, Zool. Anz. *35:* 310. Tibet, just southwest of Koko-Nor. J. L. Chaworth-Musters thought this form represented *tolai* (= *capensis*), not *oiostolus.*

Lepus oiostolus illuteus Thomas, 1914

1914. *Lepus oiostolus illuteus* Thomas, J. Bombay N.H. Soc. *23:* 233. Kang Sar, 250 miles east of Gyantze, 10,000 ft., Tibet.

Lepus oiostolus comus G. Allen, 1927

1927. *Lepus comus* G. Allen, Amer. Mus. Nov. No. 284: 9. Tengueh, Yunnan, 5,500 ft., South-Western China.

Lepus oiostolus grahami Howell, 1928

1928. *Lepus grahami* Howell, Proc. Biol. Soc. Washington, *41:* 143. Ulongkong, about 10 miles south of Tatsienlu, about 1,000 ft., Szechuan, China.

The last two forms are unavailable to me. G. Allen (1938) regarded both as subspecies of *L. oiostolus.*

Lepus sinensis group

Lepus sinensis Gray, 1832 East Chinese Hare

Approximate distribution of species: Korea, Formosa, and South-Eastern China (states of Fukien, Chekiang, Anhwei and Kiangsu).

Lepus sinensis sinensis Gray, 1832

1832. *Lepus sinensis* Gray, Illustr. Indian Zool. *2*, pl. 20. Type locality taken by G. Allen as "more or less in the region of Canton", Southern China.

1930. *Lepus yuenshanensis* Shih, Bull. Dept. Biol. Sun Yatsen Univ. Canton, No. 9, 3. Yuen Shan, Wukanghsien, Hunan, China.

Range: Fukien (part), Chekiang, Anhwei, Kiangsu, Hunan, etc., Southern China.

Lepus sinensis coreanus Thomas, 1892

1892. *Lepus sinensis coreanus* Thomas, Ann. N.H. *19:* 146. Seoul, Korea.

Lepus sinensis formosus Thomas, 1908

1908. *Lepus formosus* Thomas, Ann. Mag. N.H. *1:* 449. Baksa, Formosa.

Lepus sinensis flaviventris G. Allen, 1927

1927. *Caprolagus sinensis flaviventris* G. Allen, Amer. Mus. Novit. No. 284: 5. Chunganhsien, Fukien, Southern China.

Incertae sedis

1916. *Lepus laskerewi* Khomenko, Trav. Soc. Nat. Bessarabie, *5:* 11. Locality ? (*N.V.*)

1918. *Lepus sadiya* Kloss, Rec. Ind. Mus. Calcutta, *15:* 95. Kobo, about 15 miles west of Sadiya, North-Eastern Assam.

Subgenus *ALLOLAGUS* Ognev, 1929

Lepus brachyurus Temminck, 1845 Japanese Hare

Approximate distribution of species: Japan, and if *mandshuricus* is the same, the Amur-Ussuri district of Eastern Siberia, and according to Bobrinskii, Manchuria and Korea.

Lepus brachyurus brachyurus Temminck, 1845

1845. *Lepus brachyurus* Temminck, Siebold's Fauna Japonica, Mamm. 44, pl. 11, figs. 2, 3, 4. Nagasaki, Kiushiu, Japan. Range includes Shikoku, and Hondo.

Lepus (?) brachyurus mandshuricus Radde, 1861

1861. *Lepus mandshuricus* Radde, Mélang. Biol. St. Pétersb. *3:* 684. Bureja Mountains, East Amurland.

1922. *Lepus mandschuricus* subphasa *melanonotus* Ognev, Ann. Mus. Zool. Acad. St. Pétersb. *23:* 489. Ranges to Ussuri region, Manchuria, Korea (Bobrinskii). I am unacquainted with this form, which is listed by Russian authors as a valid species but which from descriptions seems very reminiscent of *L. brachyurus*. Bobrinskii (1944) emends the name to *Lepus mantschuricus* (Mamm. U.S.S.R. Moscow, 273).

Lepus brachyurus okiensis Thomas, 1906

1906. *Lepus brachyurus okiensis* Thomas, P.Z.S. *1905*, 2: 359. Dogo Island, Oki Islands, Japan.

Lepus brachyurus angustidens Hollister, 1912

1912. *Lepus brachyurus angustidens* Hollister, Proc. Biol. Soc. Washington, *25:* 183. Tate Yama Mountain, Hondo, Japan.

1918. *Lepus brachyurus etigo* Abe, Zool. Mag. Tokyo, *30:* 252, 330. Matsumine, Yumagata Pref., Hondo, Japan.

Lepus brachyurus lyoni Kishida, 1937

1937. *Lepus brachyurus lyoni* Kishida, Rigakukai, *35,* 8: 747. (*N.V.*) Sado Island, Japan.

Subgenus *TARIMOLAGUS* Gureev, 1947

Lepus yarkandensis Günther, 1875 Yarkand Hare

Approximate distribution of species: Chinese Turkestan.

Lepus yarkandensis Günther, 1875

1875. *Lepus yarkandensis* Günther, Ann. Mag. N.H. *16:* 229. Yarkand, Chinese Turkestan.

Genus **ORYCTOLAGUS** Lilljeborg, 1874

1874. *Oryctolagus* Lilljeborg, Sveriges og Norges Ryggradsdjur, *1:* 417. *Lepus cuniculus* Linnaeus.

1790. *Cuniculus* Meyer, Mag. f. Thiergesch. *1,* 1: 52. Not of Brisson, 1762. *Cuniculus campestris* Meyer = *Lepus cuniculus* Linnaeus.

1 species: *Oryctolagus cuniculus*, page 443

Oryctolagus cuniculus Linnaeus, 1758 Rabbit

Approximate distribution of species: Morocco, Algeria, Madeira, the Azores, Sardinia, Crete; British Isles, France, Belgium, Holland, Switzerland, Italy, Germany, Spain, Poland. Details of distribution much modified by human agency. Introduced in Southern Russia (Ukraine), (Australia), etc.

Oryctolagus cuniculus cuniculus Linnaeus, 1758

1758. *Lepus cuniculus* Linnaeus, Syst. Nat. 10th ed. *1:* 58. Germany.

(?) 1837. *Lepus vernicularis* Thompson, Athenaeum, 468, *nom. nud.* Ireland.

(?) 1843. *Lepus vermicula* Gray, List Spec. Mamm. B.M. 128, *nom. nud.*

1867. *Cuniculus fodiens* Gray, Ann. Mag. N.H. *20:* 225. Substitute for *cuniculus.*

(?) 1913. *Cuniculus kreyenbergi* Honigmann, S.B. Ges. Nat. Fr. Berlin, 296. Yenchowfu, Fukien, China. (? Introduced: "one cannot help believing that this animal . . . was either an escaped individual of the common European rabbit or was a young specimen of Chinese hare" (G. Allen, 1938, Mamm. China & Mongolia, *1:* 558).)

(N.B.—*Lepus nigripes* Bartlett, 1857, *P.Z.S.* 160, pl. 56, was admitted to be a domestic variety. See also 1861, *P.Z.S.* 40, pl. 4.)

Range: Central Europe, north of the Mediterranean region, west to Ireland.

ORYCTOLAGUS CUNICULUS ALGIRUS Loche, 1858

1858. *Cuniculus algirus* Loche, Cat. Mamm. Oiseaux Algérie, 27. Algeria. Range: Morocco and Northern Algeria.

ORYCTOLAGUS CUNICULUS HUXLEYI Haeckel, 1874

1874. *Lepus huxleyi* Haeckel, Hist. de la création des êtres organisés d'après les lois naturelles, 130. Porto Santo, Madeira.

1906. *Oryctolagus cuniculus cnossius* Bate, P.Z.S. *1905, 2:* 322. Dhia, off Candia, Crete.

Range: Mediterranean region, introduced in the Azores, Madeira and Salvage Islands, etc.

ORYCTOLAGUS CUNICULUS BRACHYOTUS Trouessart, 1917

1917. *Oryctolagus cuniculus brachyotus* Trouessart, Bull. Mus. H.N. Paris, *22:* 371. Riège, Camargue, Bouches-du-Rhône, France.

ORYCTOLAGUS CUNICULUS OREAS Cabrera, 1922

1922. *Oryctolagus cuniculus oreas* Cabrera, Bol. Soc. Esp. H.N. *22:* 112. Xauen, Spanish Morocco.

ORYCTOLAGUS CUNICULUS HABETENSIS Cabrera, 1923

1923. *Oryctolagus cuniculus habetensis* Cabrera, Bol. Soc. Esp. H.N. *23:* 366. Dar Amezuk, Anyera, Spanish Morocco.

Genus **CAPROLAGUS** Blyth, 1845

1845. *Caprolagus* Blyth, J. Asiat. Soc. Bengal, *14:* 247. *Lepus hispidus* Pearson.

1 species: *Caprolagus hispidus*, page 444

Caprolagus hispidus Pearson, 1839 — Assam Rabbit ("Hispid Hare")

Approximate distribution of species: North-Eastern India; Eastern Bengal, Nepal, Assam, and west to United Provinces (B.M.).

CAPROLAGUS HISPIDUS Pearson, 1839

1839. *Lepus hispidus* Pearson, in M'Clelland, P.Z.S. 152. Northern Assam, foot of Himalayas.

Genus **PENTALAGUS** Lyon, 1904

1904. *Pentalagus* Lyon, Smiths. Misc. Coll. *45*: 428. *Caprologus furnessi* Stone.

1 species: *Pentalagus furnessi*, page 444

Pentalagus furnessi Stone, 1900 — Liukiu Rabbit

Approximate distribution of species: Liukiu Islands.

PENTALAGUS FURNESSI Stone, 1900

1900. *Caprolagus furnessi* Stone, Proc. Acad. Nat. Sci. Philadelphia, 460. Amami-Oshima, Liukiu Islands (see Kuroda, 1938). Also occurs Tokunoshima.

FAMILY OCHOTONIDAE

Genus: *Ochotona*, page 445

This family differs from the Leporidae principally by its lack of postorbital processes, its long posterior prolongation of the zygoma, its shorter ears and, judging by skulls examined from Eurasia, its much larger bullae. The genus was revised by Bonhote, 1905, *P.Z.S. 1904, 2:* 205. No two authors are agreed as to the number of species in the genus *Ochotona*, and the fragmentary material in the British Museum for at least two of the earlier named species makes it difficult to assess the specific characters. Some authors think this genus should be divided into three subgenera, but none of them seem to be agreed as to which species should go into which subgenus. Examination of all Asiatic material in the British Museum convinces me that there are two (and only two) groups of subgeneric value which can be distinguished: those species in which the incisive foramina and the palatal foramina are completely or practically distinct from each other (for which the name *Pika* seems available), and those in which the incisive and palatal foramina are confluent, as in all Leporidae (and incidentally also in all Rodentia). Certain signs of intergradation, or even overlapping, in this character can sometimes be seen in individual specimens. The type (? and only known specimen) of *Ochotona rufescens vulturna* appears to be indistinguishable in foramina structure from the *Pika* type, although *rufescens* belongs to *Ochotona sensu stricto* (in which the foramina are not distinct from each other); all other specimens of *O. rufescens* which I have measured are quite normal in this respect. Whether *vulturna* was based on an abnormality, or what exactly its status is, is not clear to me on material available. I do not believe, however, that *Ochotona sensu stricto* as here understood can be separated into two subgeneric groups (as Bonhote indicated by his grouping of the species); nor that *Pika*, as here understood, is composed of more than one subgeneric type, as indicated by G. Allen and Ognev.

Genus **OCHOTONA** Link, 1795

1795. *Ochotona* Link, Beytrage z. Naturgesch. *1*, 2: 74. *Lepus ogotona* Pallas = *Lepus dauuricus* Pallas.
1799. *Pika* Lacepède, Tabl. des Mammif. 9. *Lepus alpinus* Pallas. Valid as a subgenus.
1800. *Lagomys* G. Cuvier, Leçons Anat. Comp. *1*, tabl. 1. Not of Storr, 1780. No type, "Pikas".
1867. *Ogotoma* Gray, Ann. Mag. N.H. *20:* 220. *Ogotoma pallasii* Gray.
1904. *Conothoa* Lyon, Smith. Misc. Coll. *45:* 438. *Ochotona roylii* Ogilby.
1939. *Tibetholagus* Argyropulo & Pidoplichka, C.R. Acad. Sci. U.R.S.S. *24:* 727. *Lagomys koslowi* Büchner. (No exact diagnostic characters given.)

12 species in Asia:

Ochotona alpina, page 453
Ochotona daurica, page 452
Ochotona hyperborea, page 454
Ochotona koslowi, page 453
Ochotona ladacensis, page 456
Ochotona macrotis, page 451
Ochotona pallasi, page 455
Ochotona pusilla, page 449
Ochotona roylei, page 450
Ochotona rufescens, page 452
Ochotona rutila, page 456
Ochotona thibetana, page 450

Of these species, *alpina*, *hyperborea*, *ladacensis*, *rutila* and *pallasi* belong to the subgenus *Pika* as here understood, with the palatal and incisive foramina normally distinct from each other. The first two are, apparently, hard to distinguish at all times, since it is said that in Transbaikalia there are forms intermediate between the two (cf. Bobrinskii, 1944). But they occur together in many places where they can be separated by average size characters. I find it difficult to distinguish *pallasi* (= *pricei* of Russian authors) from *alpina* by skull characters of specimens in the British Museum collection, and the cranial characters used by G. Allen (who referred them to different subgenera) certainly do not hold good. Kuznetzov (in Bobrinskii), 1944, separates them by some colour details. So far as I can ascertain, the species *rutila* and *ladacensis* can be separated fairly easily from the last two species by their larger ears. *O. ladacensis* is a very distinct species, with very small bullae and very narrow frontals. The form *gloveri* seems sufficiently like *rutila* to be made a race of it, but I have no ear measurements for that little known form. In *Ochotona sensu stricto*, which here contains the remainder of the species, two species, *pusilla* (the first name in the genus) and *koslowi* are only represented in the British Museum by broken skulls and a few skins; those of *koslowi* do not bear measurements. Assuming that *pusilla* is, as indicated by Bonhote, a relatively small species with rather short ears, and bearing in mind that Bonhote's character of the "combined foramina narrowing in centre" or "not narrowing in centre" does not hold good (owing to numerous intermediate individuals) when a large series of skulls is examined, it seems to me that in the typical subgenus two small species may be distinguished, *pusilla* (perhaps with *nubrica* and *forresti*), and *thibetana* (called *hodgsoni* by Bonhote), which seem to occur together in Yunnan (Likiang Range, British Museum material). I provisionally list *nubrica* and *forresti* as eastern races of *O. pusilla*. But should this prove to be incorrect, then *nubrica* (with *forresti* as a race) would stand as yet another species. Of the larger species in the typical subgenus, *O. macrotis* (with which I regard *wollastoni* as being conspecific) stands apart on account of its enlarged ear. Of the remainder, with smaller ear (at least on average), *roylei* stands apart as possessing rather small bullae. I cannot regard *wardi* of Bonhote as anything but a subspecies of *roylei*. There is a large series of both in the British Museum, and their palatal foramina are not distinguishable with certainty. The remaining species are, in order of naming, *daurica*, *rufescens* and *koslowi*. The last is very little known. Colour may distinguish them, as well as the characters noted here. But there is a seasonal change in at least some of the species in this genus, and this cannot be well known in *koslowi*, which is rare. Kuznetzov (1944) distinguishes *daurica* and *rufescens* partly by size of skull, but this does not hold good in the British Museum material, when Chinese, Indian and South-West Asian skulls

are taken into account. It should perhaps be mentioned that G. Allen (1938) used in his key the presence or absence of a small foramen in each frontal bone as the diagnostic character of some species. Outside the area worked by that author, however, this character is so variable individually that I discard it as being valueless. It should be noted that the skull of *O. koslowi* is well figured by its describer and is remarkable for being much arched. I noted the same peculiarity in the forms *curzoniae* and *melanostoma*. The species *O. daurica* is here considered as containing *curzoniae*. Owing to the fact that the dorsal profile of skull may be arched or nearly flat within the species *O. rufescens*, I see no reason why *curzoniae* should not be referred to *daurica*, as *melanostoma* is in some ways intermediate between the two. G. Allen regarded the last named as a race of *daurica*. In British Museum material, the skull is not very much arched in *O. daurica* and its races *altaina* and *bedfordi*, and the bullae are large, 26–28 per cent. of the occipitonasal length on average. *O. d. melanostoma* has the skull arched, and the bullae large (27 per cent. of occipitonasal length). *O. curzoniae* and its representative *seiana* have smaller bullae (25 per cent. of occipitonasal length on average for *curzoniae*, 24 per cent. in the single skull of *seiana*), and the skull is arched. Externally, all these forms are rather similar, and they differ from *O. rufescens* in having the hindtoe pads normally concealed by hair; in *rufescens* these pads are not covered by hair, and prominent. So far as is ascertainable, *O. koslowi* differs from both *rufescens* and *daurica* by its larger size.

Provisional key to the species of *Ochotona* in Asia, based on British Museum material:

1. Palatal and incisive foramina completely, or practically, distinct from each other. (Subgenus *Pika*) ——2
   Palatal and incisive foramina not distinct, but confluent. (Subgenus *Ochotona*) ——6

2. Occipitonasal length of skull at most about 44 mm.[1] (Ear not enlarged.) *OCHOTONA HYPERBOREA*
   (Forms examined: *mantchurica*. For notes on this species compared with *O. alpina*, see above.)
   Occipitonasal length in adult skulls usually exceeds 45 mm. ——3

3. Ear enlarged, most often averaging about 26–28 mm. in length.[1] Bullae smaller, on average less than a quarter of occipitonasal length. ——4
   Ear not enlarged, not exceeding 24 mm.[1] Bullae larger, on average more than a quarter of occipitonasal length. ——5

4. Bullae small, averaging about 21 per cent. of occipitonasal length. Frontals very narrow, their least combined width about 7 per cent. of the occipitonasal length. *OCHOTONA LADACENSIS*

[1] So far as can be ascertained from material available, or, in the case of external characters, from the published measurements of Bonhote and others.

Bullae larger, averaging over 22 per cent. of the occipitonasal length. Frontals least width equal to, or exceeding, one-tenth of occipitonasal length. *OCHOTONA RUTILA*

(Forms examined: *rutila*, *erythrotis*, *gloveri*. (The ear length of *gloveri* seems not to be known. It is nearest *rutila*, with rather wider frontals, smaller skull and shorter palate, but only one skull, the type, is available, and not many skulls for *rutila*.))

5. Bullae, on average, are relatively smaller.[1] *OCHOTONA ALPINA*
(Forms examined: *alpina*.)
Bullae on average relatively larger.[1] *OCHOTONA PALLASI*
(Forms examined: *pallasi* (one skull), *hamica*, *pricei*.)

6. Ear enlarged, rarely less than 27 mm. in length. The occipitonasal length usually exceeds 43 mm. *OCHOTONA MACROTIS*
(Forms examined: *macrotis*, *sacana*, *wollastoni*.)
Ear not enlarged, rarely reaching 27 mm. in length. ——7

7. Small species: length of palate (measured from front of incisors to back of palate) is normally less than 15 mm. Occipitonasal length is on average approximately 39 mm. at most, but usually less. (We possess no fully measurable skulls for *pusilla* (typical race).)[1] ——8
Larger species: length of palate normally approximates to, or exceeds, 15 mm. Occipitonasal length of adult is on average 40 mm. and more (not ascertainable for *koslowi*, which has the palate about 18 mm.). ——9

8. Length of the palate roughly 14 mm. on average.[1] *OCHOTONA PUSILLA*
(Forms examined: *pusilla*, *angustifrons* (skins only; in these forms, ear 17 mm. and less in our specimens); *forresti*, *nubrica* (in the last two forms, ear normally 18 mm. and more). The placing of the last two forms is provisional. See remarks above.)
Length of the palate is normally less than 14 mm. (two exceptions in 24 skulls). *OCHOTONA THIBETANA*
(Forms examined: *thibetana*, *cansus*, *huangensis*, *sorella*, *sikimaria*, *stevensi* (one skin only).)

9. Length of hindfoot 41–42 mm. (Length of palate, one skull, is 18 mm.) (Material for this species negligible.) *OCHOTONA KOSLOWI*
Length of hindfoot (in a considerable series) not reaching 40 mm. —— 10

10. Bullae small, on average 23 per cent. or less of occipitonasal length. Length of palate rarely reaching 17 mm. *OCHOTONA ROYLEI*
Forms examined: *roylei*, *baltina*, *chinensis*, *nepalensis*, *wardi*.)
Bullae larger, usually exceeding a quarter of occipitonasal length (24 per cent. only in the type and only available specimen of *sciana*). ——11

[1] So far as can be ascertained from material available.

11. Length of palate (measured from front of incisors to back of palate) normally not less than 17 mm. Hindtoe pads not covered by hair, prominent.
OCHOTONA RUFESCENS

(Forms examined: *rufescens*, *regina*, *vizier* (*vulturna*). The last named may very well not belong in this species. Its palatal and incisive foramina are separate, as in the subgenus *Pika*, and its palate length does not agree with the other races, being too short. It seems based on one specimen only, with an occipitonasal length of 41.4 mm. Until further material is collected, the status of this form must remain in doubt.)

Length of palate usually not reaching 17 mm. (six exceptions in 28 skulls). Hindtoe pads usually concealed by hair. *OCHOTONA DAURICA*

(Forms examined: *daurica*, *altaina*, *bedfordi*, *curzoniae*, *melanostoma*, *seiana*.)

Subgenus *OCHOTONA* Link, 1795

Ochotona pusilla Pallas, 1769 Steppe Pika (Mouse-Hare)

Approximate distribution of species: South-Eastern Russia (Upper Volga), Southern Urals and Northern Kazakstan (east, apparently, to the Saissan region, Bobrinskii's distribution map). Perhaps represented in Kashmir, Northern Assam, Northern Burma, Yunnan.

Ochotona pusilla pusilla Pallas, 1769

1769. *Lepus pusillus* Pallas, Nov. Comm. Sci. Petrop. *13:* 531. Neighbourhood of Samara, South-Eastern Russia. (See Chaworth-Musters, 1933, Ann. Mag. N.H. *12:* 137.)

1771. *Lepus minutus* Pallas, Reise, *1:* 155 (footnote).

Ochotona (?) pusilla nubrica Thomas, 1922

1922. *Ochotona nubrica* Thomas, Ann. Mag. N.H. *9:* 187. Tuggur, Nubra Valley, 10,000 ft., Ladak, Kashmir.

Ochotona (?) pusilla forresti Thomas, 1923

1923. *Ochotona forresti* Thomas, Ann. Mag. N.H. *11:* 662. North-western flank Likiang Range, 27° N., 100°30′ E., 13,000 ft., Yunnan, China. Range: Yunnan; Northern Assam, Northern Burma (B.M.).

Ochotona pusilla angustifrons Argyropulo, 1932

1932. *Ochotona pusilla angustifrons* Argyropulo, Trav. Inst. Zool. Acad. Sci. U.R.S.S. *1:* 55. Karkaralinsk district (River Djamtcha), Eastern Kazakstan.

Ochotona (?) pusilla osgoodi Anthony, 1941

1941. *Ochotona osgoodi* Anthony, Field Mus. Nat. Hist. Zool. Ser. *27:* 113. Nyetmaw River, 8,600 ft., North-Eastern Burma. (From description, nearest *forresti*, but with rather larger bullae.)

Ochotona thibetana Milne-Edwards, 1872 Moupin Pika

Approximate distribution of species: Sikkim; Yunnan, Szechuan, Shensi, Shansi, Kansu, Hupeh, in China.

Ochotona thibetana thibetana Milne-Edwards, 1872

1872. *Lagomys thibetanus* Milne-Edwards, in David, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 93 (footnote). Moupin, Szechuan, China.
1899. *Ochotona tibetana* de Winton & Styan, P.Z.S. 577.
1905. *Ochotona hodgsoni* Bonhote, P.Z.S. *1904*, 2: 218. Not of Blyth, 1841.
1922. *Ochotona zappeyi* Thomas, Ann. Mag. N.H. *9:* 192. Shuowlow, Nia-nong, north-west of Tatsienlu, Western Szechuan, China.
1923. *Ochotona thibetana sacraria* Thomas, Ann. Mag. N.H. *11:* 663. Mt. Omi-hsien, Southern Szechuan, 9,500 ft., China.

Range: Szechuan, Hupeh and Yunnan, China.

Ochotona thibetana cansa Lyon, 1907

1907. *Ochotona cansus* Lyon, Smiths. Misc. Coll. *50:* 136. Taocheo, Kansu, China.

Ochotona thibetana huangensis Matschie, 1907

1907. *Conothoa huangensis* Matschie, Wiss. Ergebn. Exped. Filchner to China, *10*, 1: 214. Type locality assumed to be the Tsingling, in vicinity of Sianfu, Southern Shensi, China (G. Allen, 1938, 544).
1907. *Conothoa huanghoensis* Matschie, *ibid.* 243 (*lapsus*).
1911. *Ochotona syrinx* Thomas, Abstr. P.Z.S. 27; P.Z.S. 692. Mt. Tai-pei-san, 10,600 ft., Southern Shensi, China.
1912. *Ochotona cansa morosa* Thomas, Ann. Mag. N.H. *10:* 403. Mt. Tai-pei-san, Shensi, China.

Ochotona thibetana sorella Thomas, 1908

1908. *Ochotona sorella* Thomas, Abstr. P.Z.S. 45. 1909, P.Z.S. *1908:* 982. Twenty miles south of Ningwufu, Shansi, 6,600 ft., China.

Ochotona thibetana sikimaria Thomas, 1922

1922. *Ochotona sikimaria* Thomas, Ann. Mag. N.H. *9:* 191. Lacheng, 8,800 ft., Sikkim, North-Eastern India.

Ochotona thibetana stevensi Osgood, 1932

1932. *Ochotona cansa stevensi* Osgood, Field Mus. Publ. Zool. *18:* 328. Wushi, south-west of Tatsienlu, Szechuan, China.

Ochotona roylei Ogilby, 1839 Royle's Pika

Approximate distribution of species: Tibet, Szechuan and Yunnan, in Western China; Nepal, Punjab and Kashmir; Northern Burma (B.M.).

Ochotona roylei roylei Ogilby, 1839

1839. *Lagomys roylii* Ogilby, Royle's Ill. Botany Himalaya, lxix, pl. 4. Choor Mountain, 60 miles north of Saharanpur, Punjab.

1841. *Lagomys hodgsoni* Blyth, J. Asiat. Soc. Bengal, *10:* 817, plate at p. 844. Kashmir (Bonhote).

1841. *Lagomys nepalensis* Hodgson, J. Asiat. Soc. Bengal, *10:* 854, plate at p. 816. About 30 miles north of Katmandu, Nepal.

1891. *Lagomys roylei* Blanford, Fauna Brit. India, Mamm. 456. Emendation.

Range: as above, Tibet and Kumaon (B.M.).

Ochotona roylei wardi Bonhote, 1904

1904. *Ochotona wardi* Bonhote, Abstr. P.Z.S. No. 10: 13. 1905, P.Z.S. *1904*, 2: 214. Talien (Tullian), 11,000 ft. Kashmir. Range: known from many places in Kashmir, North-West Frontier Province, Ladak, Gilgit, etc., at high altitudes.

Ochotona roylei chinensis Thomas, 1911

1911. *Ochotona roylei chinensis* Thomas, Ann. Mag. N.H. *8:* 728. Yaratsaga, near Tatsienlu, 13,000 ft., Szechuan, China.

1912. *Ochotona roylei sinensis* Lydekker, Zoo Record for 1911, Mamm. 46 (*lapsus calami*).

Range: Szechuan and Yunnan, China.

Ochotona roylei baltina Thomas, 1922

1922. *Ochotona roylei baltina* Thomas, Ann. Mag. N.H. *9:* 188. Nurh, River Indus, east of Skardo, Baltistan, Kashmir.

Ochotona macrotis Günther, 1875 Large-eared Pika

Approximate distribution of species: Russian Tianshan and Pamir Mountains, Kashmir, northwards to Karakorum Mountains, Northern Nepal, and Kuenlun Mountains in Southern Chinese Turkestan.

Ochotona macrotis macrotis Günther, 1875

1875. *Lagomys macrotis* Günther, Ann. Mag. N.H. *16:* 231 (September). Doba, Kuenlun Mountains, extreme southern Chinese Turkestan (on road from Yarkand to Karakorum Pass, Blanford).

1875. *Lagomys auritus* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 111 (October). Lukung, Pangong Lake, Ladak, Kashmir.

1875. *Lagomys griseus* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 111 (October). Kuenlun Range, south of Sanju Pass.

1914. *Ochotona sacana* Thomas, Ann. Mag. N.H. *13:* 572. Przewalsk, Issyk-Kul, Semirechyia, Russian Central Asia.

Ochotona macrotis wollastoni Thomas & Hinton, 1922

1922. *Ochotona wollastoni* Thomas & Hinton, Ann. Mag. N.H. *9:* 184. East of Mt. Everest, 17,500 ft., Northern Nepal.

Ochotona daurica Pallas, 1776 Daurian Pika

Approximate distribution of species: steppes of Russian Altai and Transbaikalia, Mongolia, Koko-Nor, Kansu, Shensi and Shansi in China, Tibet, Sikkim and Persia.

Ochotona daurica daurica Pallas, 1776

1776. *Lepus dauuricus* Pallas, Reise Russ. Reichs. *3:* 692. Kulusutai, Onon River, Eastern Siberia (*loc. cit.* 220), according to notes left by J. L. Chaworth-Musters.

1778. *Lepus ogotona* Pallas, Nov. Spec. Quad. Glir. Ord. 59, pl. 3, pl. 4a, fig. 16.

1890. *Lagomys dauricus* Buchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1:* Säugeth. 172. Emendation.

Range: Transbaikalia and Mongolia.

Ochotona (?) daurica curzoniae Hodgson, 1858

1858. *Lagomys curzoniae* Hodgson, J. Asiat. Soc. Bengal, *26:* 207. Chumbi Valley, in extreme south Tibet. Range: Chumbi Valley; Sikkim; and Tingri, Tibet (B.M.).

Ochotona (?) daurica melanostoma Buchner, 1890

1890. *Lagomys melanostomus* Büchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1:* Säugeth. 176, pl. 22, figs. 2–3. Kuku-Nor and Kansu, China.

Ochotona daurica bedfordi Thomas, 1908

1908. *Ochotona bedfordi* Thomas, Abstr. P.Z.S. 45. P.Z.S. 1909, *1908:* 981. Ningwufu, Shansi, 6,000 ft., China.

Ochotona daurica altaina Thomas, 1911

1911. *Ochotona dauurica altaina* Thomas, Ann. Mag. N.H. *8:* 761. Achit Nor, North-Western Mongolia. Ranges to Chuiskaya Steppe, Russian Altai.

Ochotona daurica annectens Miller, 1911

1911. *Ochotona annectens* Miller, Proc. Biol. Soc. Washington, *24:* 54. Fifteen miles north-east of Ching-ning-chow, 6,200 ft., Kansu, China.

Ochotona (?) daurica seiana Thomas, 1922

1922. *Ochotona curzoniae seiana* Thomas, Ann. Mag. N.H. *9:* 189. Seistan, Persia.

Ochotona rufescens Gray, 1842 Afghan Pika

Approximate distribution of species: Kopet-Dag Mountains and neighbourhood, in South-Western Russian Turkestan, Afghanistan, Persia and Baluchistan.

Ochotona rufescens rufescens Gray, 1842

1842. *Lagomys rufescens* Gray, Ann. Mag. N.H. *10:* 266. Near Babers Tomb, Kabul, Afghanistan. Range: Baluchistan, part, Afghanistan.

Ochotona rufescens regina Thomas, 1911

1911. *Ochotona rufescens regina* Thomas, Ann. Mag. N.H. *8:* 762. Kopet-Dag Mountains, west of Ashabad, 3,000 ft., Russian Turkestan. Ranges to Meshed, Persia.

Ochotona rufescens vizier Thomas, 1911

1911. *Ochotona rufescens vizier* Thomas, Ann. Mag. N.H. *8:* 762. Kohrud, north of Isfahan, 9,000 ft., Persia.

Ochotona (?) rufescens vulturna Thomas, 1920

1920. *Ochotona rufescens vulturna* Thomas, J. Bombay N.H. Soc. *26:* 937. Harboi, near Kelat, Baluchistan. See above for remarks on this aberrant form, which seems based on one specimen only and may not belong in this species.

Ochotona koslowi Büchner, 1894 Koslow's Pika

Approximate distribution of species: Tibet.

Ochotona koslowi Büchner, 1894

1894. *Lagomys koslowi* Büchner, Mamm. Przewalski, *1:* 187, pl. 23, fig. 3; and pl. 24, figs. 13–17. Guldsha Valley, 14,000 ft., Northern Tibet.

Subgenus *PIKA* Lacepède, 1799

Ochotona alpina Pallas, 1773 Altai Pika

Approximate distribution of species: Altai, Sayan, Cisbaikalian and Transbaikalian Mountains (Kuznetzov), Mongolia, to Kansu.

Ochotona alpina alpina Pallas, 1773

1773. *Lepus alpinus* Pallas, Reise. Russ. Reichs. *2:* 701. Tigeretskii Range, Altai Mountains, Siberia.

1842. *Lagomys ater* Eversmann. Uchen. Zap. Kasan. Univ. *3:* 3. Altai Mountains.

Range: Western Altai Mountains and Mongolia.

Ochotona alpina cinereofusca Schrenk, 1858

1858. *Lagomys hyperboreus* var. *cinereo-fusca* Schrenk, Amurland, *1:* 148. Type from the Upper Amur, according to Kuznetzov, who says it is a race of the present species.

1935. *Ochotona alpina scorodumovi* Skalon, Bull. Anti-Plague Organis. E. Siberia, *1:* 85–87. (*N.V.*)

Range: Eastern Transbaikalia, Upper Amur.

Ochotona alpina nitida Hollister, 1912

1912. *Ochotona nitida* Hollister, Smiths. Misc. Coll. *60,* 14: 4. Tchegan-Burgazi Pass, Upper Katun River, 50° N., 88° E., Siberian Altai Mountains.

Ochotona alpina svatoshi Turov, 1924

1924. *Ochotona svatoshi* Turov, C.R. Acad. Sci. U.R.S.S. 110. Bargusin Range, Transbaikalia. Range: Western Transbaikalia.

Ochotona alpina argentata Howell, 1928

1928. *Ochotona (Pika) alpina argentata* Howell, Proc. Biol. Soc. Washington, *41:* 116. Fifteen miles north-northwest of Ningsia, Northern Kansu, China.

Ochotona alpina changaica Ognev, 1940

1940. *Ochotona (Pika) alpina changaica* Ognev, Mamm. U.R.S.S. and adjacent Countries, *4:* 33. Subur-Hairhan, Hangai, Mongolia.

Ochotona hyperborea Pallas, 1811 Northern Pika

Approximate distribution of species: Northern Ural Mountains, Eastern Russia; east of the Yenesei, north to Arctic coast, and east to the Anadyr region, Kamtchatka, Sakhalin; Manchuria, Mongolia and Japan (Hokkaido).

Ochotona hyperborea hyperborea Pallas, 1811

1811. *Lepus hyperboreus* Pallas, Zoogr. Ross. As. *1:* 152. Chukotka region, Eastern Siberia.

(?) 1858. *Lagomys hyperboreus* var. *normalis* Schrenk, Amurland, *1:* 148.

1882. *Lagomys litoralis* Peters, S.B. Ges. Nat. Fr. Berlin, 95. Emmahafen, near Cape Chukotski, North-Eastern Siberia.

1903. *Ochotona kolymensis* J. Allen, Bull. Amer. Mus. N.H. *19:* 154. Verkhne Kolymsk, Kolyma region, Eastern Siberia.

Range: Chukotka, Anadyr and Kolyma regions, North-Eastern Siberia.

Ochotona hyperborea ferruginea Schrenk, 1858

1858. *Lagomys hyperboreus* var. *ferruginea* Schrenk, Amurland, *1:* 148. Khalzansk Mountains, Kamtchatka.

(?) 1922. *Lagomys kamtschaticus* Dybowski, Arch. Tow. Nauk. Lwow, *1:* 354, *nom. nud.* Kamtchatka.

1934. *Ochotona (Pika) hyperborea turuchanensis* Naumov, Trudy Polya. Komiss. No. 17, 38 (German), 78. Utschami, on Lower Tungushka River, Middle Siberia. (V.I.)

Range: Kamtchatka, Yakutia, northern part of Yenesei Basin.

Ochotona hyperborea cinereoflava Schrenk, 1858

1858. *Lagomys hyperboreus* var. *cinereo-flava* Schrenk, Amurland, *1:* 148. Near Udskoi Ostrog, Eastern Siberia. Range: coast of Sea of Okhotsk.

Ochotona hyperborea mantchurica Thomas, 1909

1909. *Ochotona (Pika) hyperborea mantchurica* Thomas, Ann. Mag. N.H. *4:* 504. Khingan Mountains, 3,800 ft., Manchuria. Range: Sayan Mountains, area round Lake Baikal, Transbaikalia, Amur-Ussuri region, Mongolia, Manchuria.

Ochotona hyperborea coreana Allen & Andrews, 1913

1913. *Ochotona (Pika) coreanus* J. Allen & Andrews, Bull. Amer. Mus. N.H. *32:* 429. Pochong, North Korea.

Ochotona hyperborea uralensis Flerov, 1927

1927. *Ochotona hyperborea uralensis* Flerov, Ann. Mus. Zool. Leningrad, *28:* 139. Synya Basin, and Lyapin River, Northern Ural Mountains, Eastern Russia.

Ochotona hyperborea yesoensis Kishida, 1930

1930. *Ochotona yesoensis* Kishida, Lansania, Tokyo, *2*, 13: 46. (*N.V.*) Oketo, Prov. Kitami, Hokkaido, Japan.

(?) 1930. *Ochotona kobayashii* Kishida, Dobuts. Zasshi. *42*, 504: 372. Hokkaido. *Nom. nud.*

1930. *Ochotona ornata* Kishida, *loc. cit.* 372.

1931. *Ochotona yezoensis* Inukai, Trans. Sapporo N.H. Soc. *xi*, 4: 210. Central Mountains, Hokkaido (Taisetsuzan), Japan. Quoted as of Kishida, 1930. (*N.V.*)

(?) 1933. *Ochotona sadakei* Kishida, Bot. & Zool. *1*, 1: 26; and *Ochotona rufa*, *O. inukaii*, *O. convexa*, *O. kinuta*, 26; all from Daisetsuzan, Hokkaido, Japan, and all *nom. nud.* (Kishida says the first two names were first published in 1930, and all the others in 1932, but he does not give his original references.) (*N.V.*)

Ochotona hyperborea yoshikurai Kishida, 1932

1932. *Ochotona yoshikurai* Kishida, Lansania, *4*, 40: 150. (*N.V.*) Shirotoru, Central Sakhalin Island.

Ochotona pallasi Gray, 1867 Pallas's Pika

Approximate distribution of species: Kazakstan and Chuiskaya Steppe, in Russian Altai; Chinese Turkestan, Mongolia.

Ochotona pallasi pallasi Gray, 1867

1867. *Ogotoma pallasii* Gray, Ann. Mag. N.H. *20:* 220. Type "said to come from Asiatic Russia-Kirgisen."

1848. *Lagomys ogotona* Waterhouse, Nat. Hist. Mammalia, *2:* 17. Not of Pallas, 1778.

1905. *Ochotona ogotona* Bonhote, P.Z.S. *1904*, 2: 210. Not of Pallas, 1778.

(?) 1941. *Ochotona pricei opaca* "Argyropulo, 1939," Vinogradov & Argyropulo, Faune U.R.S.S. Tabl. Analytiques Rongeurs, 224. We are unable to trace an earlier reference. Kazakstan.

Range: apparently Kazakstan to Mongolia. Russian authors call this species *O. pricei*.

Ochotona pallasi pricei Thomas, 1911

1911. *Ochotona (Ogotoma) pricei* Thomas, Ann. Mag. N.H. *8:* 760. Mountains west of Achit Nor, Kobdo Basin, 90° E., 49°30′ N., 6,700 ft., North-Western Mongolia. Ranges to Chuiskaya Steppe, Altai.

(?) 1924. *Ochotona (Ogotoma) sushkini* Thomas, Ann. Mag. N.H. *13:* 163. Taldura Glacier, North-Eastern Russian Altai.

OCHOTONA PALLASI HAMICA Thomas, 1912

1912. *Ochotona (Ogotoma) hamica* Thomas, Ann. Mag. N.H. *9:* 407. Northern Hami Mountains, east end of Tian Shan Range, 7,500 ft., Chinese Turkestan.

Ochotona rutila Severtzov, 1873 Red Pika

Approximate distribution of species: Eastern Russian Turkestan, in mountains (Tian Shan, Hissar-Alai and Pamir Ranges), Tibet, Kansu and Szechuan, China.

OCHOTONA RUTILA RUTILA Severtzov, 1873

1873. *Lagomys rutilus* Severtzov, Mém. Soc. Amis. Sci. Moscou, *8*, 2: 19. (See also Ann. Mag. N.H. 1876, *18:* 168). Vernoe Mountains, Russian Turkestan.

OCHOTONA RUTILA ERYTHROTIS Buchner, 1890

1890. *Lagomys erythrotis* Buchner, Wiss. Res. Przewalski Reisen, *1*, Säugeth.: 165, pls. 21 and 24, figs. 1–6. Burchan-Budda, Eastern Tibet (restricted by G. Allen (1938)).

1928. *Ochotona (Ochotona) erythrotis vulpina* Howell, Proc. Biol. Soc. Washington, *41:* 117. Thirty miles west of Sining, Kansu, China.

Range: Tibet and Kansu.

OCHOTONA (?) RUTILA GLOVERI Thomas, 1922

1922. *Ochotona gloveri* Thomas, Ann. Mag. N.H. *9:* 190. Nagchuka, Western Szechuan, 10,000 ft., China.

OCHOTONA RUTILA BROOKEI G. Allen, 1937

1937. *Ochotona erythrotis brookei* G. Allen, Proc. Acad. Nat. Sci. Philadelphia, *89:* 341. A few miles north-west of Jyekundo, Kham, Eastern Tibet.

Ochotona ladacensis Gunther, 1875 Ladak Pika

Approximate distribution of species: Kashmir, Tibet, Chinese Turkestan.

OCHOTONA LADACENSIS Günther, 1875

1875. *Lagomys ladacensis* Gunther, Ann. Mag. N.H. *16:* 231. Changra Lake, 14,000 ft., Ladak, Kashmir. Range: Upper Sutlej, Ladak, Tibet, Chinese Turkestan (B.M.).

ORDER RODENTIA

On this Order, see particularly:

ELLERMAN. *The Families & Genera of Living Rodents*, 1940, *1*; 1941, *2*; and 1949, 3. London (British Museum).

HINTON. 1926. *Monograph of Voles & Lemmings*, *1*. London (British Museum).

MILLER & GIDLEY. 1918. Synopsis of the supergeneric groups of Rodents. *J. Washington Acad. Sci. 8*, 13: 431.

TULLBERG. 1899. Ueber das System der Nagethiere. *Nova Acta Reg. Soc. Sci. Upsaliensis*, *18*, 1.

In *Families & Genera of Living Rodents*, keys to all genera except a few named since that publication, and notes on all the principal literature on the Order, will be found.

Simpson (1945) adopts a classification of the Order which differs in some details from mine, and which is reviewed in Ellerman, 1949, *Families & Genera of Living Rodents*, *3:* 116.

Simpson divides the Order into three "Suborders", Sciuromorpha, Myomorpha and Hystricomorpha, which are not here adopted as they are held to be indefinable. This seems to be more or less admitted by Simpson, as various families are left *incertae sedis* in his arrangement, which so far as the present region is concerned is as follows:

Simpson's (1945) Classification:

SCIUROMORPHA

Superfamily: Sciuroidea.

Family: Sciuridae (Subfamilies: Sciurinae, Petauristinae).

Superfamily: Castoroidea.

Family: Castoridae.

MYOMORPHA

Superfamily: Muroidea.

Family: Cricetidae (Subfamilies: Cricetinae, Microtinae, Gerbillinae).

Family: Spalacidae.

Family: Rhizomyidae.

Family: Muridae (Subfamilies: Murinae, Phloeomyinae).

Superfamily: Gliroidea.

Family: Gliridae.

Family: Platacanthomyidae.

Family: Seleviniidae.

Superfamily: Dipodoidea.

Family: Zapodidae (Subfamilies: Sicistinae, Zapodinae).

Family: Dipodidae (Subfamilies: Cardiocraniinae, Dipodinae, Euchoreutinae).

HYSTRICOMORPHA

Superfamily: Hystricoidea.

Family: Hystricidae (Subfamilies: Hystricinae, Atherurinae).

?HYSTRICOMORPHA or MYOMORPHA *incertae sedis:*

Superfamily: Ctenodactyloidea.

Family: Ctenodactylidae.

It appears that Simpson complicates matters by retaining too many subfamilies and families. Nine of the above families are certainly valid. There seems not the slightest need to retain the Zapodidae, as shown by Vinogradov, who has monographed the Dipodidae in some detail: Cardiocraniinae are just as distinct from the rest of the Dipodidae of Simpson as are the Zapodidae. Despite Simpson's remarks (p. 206) I am still not convinced that the Muridae should be split into two families, Cricetidae and Muridae, unless perhaps the Gerbillinae and Microtinae are also given family rank. The Cricetinae seem merely to be Muridae in which the middle row of cusps of the upper molars (which are strong in Murinae) are becoming suppressed or reduced. Certain African genera seem intermediate between the two subfamilies in dental details. Nor is it anything but bad classification to refer *Chiropodomys* to an indefinable subfamily Phlocomyinae when it is barely generically separable from *Vandeleuria*, listed by Simpson pages away from it in the Murinae as understood by him. There seems no need to regard the Platacanthomyidae as anything but a subfamily of Gliridae (here called Muscardinidae: somewhat intermediate between typical Muscardinidae and certain Muridae, in particular *Gymnuromys* from Madagascar). I doubt if the Seleviniidae need be regarded as anything but a very distinct subfamily of Muscardinidae, but I have not examined specimens of *Selevinia*.

In the Palaearctic and Indian regions, as elsewhere, Rodentia are very clearly the dominant order as regards numbers of genera, species, and named races. Introduced forms like the Nearctic *Sciurus carolinensis*, now the common squirrel of Southern England, are here ignored.

I have notes on virtually every specimen of Rodent from Asia, Europe, North Africa and Australia in the British Museum. All species in the present list which are represented in our collections can be defined. Miller (1912) reviewed the European Rodents in some detail; Vinogradov, 1933, *Tab. Analyt. de la faune de L'U.R.S.S.* 10, 1–87 [1] (published by L'Inst. Zool. Acad. Sci. Leningrad), has published his results on the rodents of the U.S.S.R. and we have a translation of this work. The rodents of China and Mongolia were reviewed by G. Allen, 1940 (in several cases in this work, however, Chinese races have not apparently been compared with extralimital named forms, with the result that in many cases the wrong specific name has been used). For a recent review of the rodents of India, Burma and Ceylon, see Ellerman, 1947, *J. Mamm. 28:* 249, and *28:* 357; and for a review of the rodents of South-Western Asia see Ellerman, 1948, *P.Z.S. 118:* 765. On most of the North African Gerbils, see Ellerman, 1947, *P.Z.S. 117*, 1: 259–271, in which notes on some other Asiatic rodents will be found; for a revision of the genus *Meriones*, see Chaworth-Musters & Ellerman, 1947, *P.Z.S. 117:* 478.

FAMILIES:

Castoridae, page 516
Ctenodactylidae, page 521
Dipodidae, page 522
Hystricidae, page 517
Muridae, page 557
Muscardinidae, page 541
Rhizomyidae, page 550
Sciuridae, page 459
Spalacidae, page 553

[1] See also Vinogradov & Argyropulo, 1941, *Faune de L'U.R.S.S.n.s.* 29.

FAMILY SCIURIDAE

Genera: *Aëretes*, page 465
Atlantoxerus, page 500
Belomys, page 459
Callosciurus, page 477
Citellus, page 504
Dremomys, page 491
Eupetaurus, page 471
Funambulus, page 494
Hylopetes, page 468
Marmota, page 513
Menetes, page 500
Petaurista, page 460
Petinomys, page 470
Pteromys, page 466
Ratufa, page 497
Sciurotamias, page 501
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Spermophilopsis, page 501
Tamias, page 503
Trogopterus, page 460

The genera *Petaurista, Pteromys, Petinomys, Hylopetes, Belomys, Trogopterus, Eupetaurus* and *Aëretes* have flying membrane attached to sides of the body, thereby differing from other squirrels of the present region. For a key to the genera of flying squirrels, see Ellerman (1940, 275). *Trogopeterus* is better distinguished from *Belomys* by its actually and proportionately longer toothrow than as indicated in this key; further work has convinced me that *Eoglaucomys* is at most a subgenus of *Hylopetes*; *Aëretes*, which is unrepresented in the British Museum, is said to differ from its ally *Petaurista* (from which it was separated) by having M 3 smaller in crown area than the other teeth, and by having broad, grooved upper incisors.

Genus **BELOMYS** Thomas, 1908

1908. *Belomys* Thomas, Ann. Mag. N.H. *1:* 2. *Sciuropterus pearsonii* Gray.

1 species: *Belomys pearsoni*, page 459

Belomys pearsoni Gray, 1842 Hairy-footed Flying Squirrel

Approximate distribution of species: Sikkim, Assam, Burma. Formosa, and, according to G. Allen, probably Yunnan and Kwantung; Indo-China.

Belomys pearsoni pearsoni Gray, 1842

1842. *Sciuropterus pearsonii* Gray, Ann. Mag. N.H. *10:* 263. Darjeeling, India.
1847. *Sciuropterus villosus* Blyth, J. Asiat. Soc. Bengal, *16:* 866. Upper Assam.
(?) 1862. *Sciuropterus kaleensis* Swinhoe, P.Z.S. 359. Northern Formosa.
Range: specimens examined from Sikkim, Naga Hills in Assam, and Formosa.

Belomys pearsoni trichotis Thomas, 1908

1908. *Belomys trichotis* Thomas, Ann. Mag. N.H. *1:* 7. Machi, Manipur.
(?) 1932. *Belomys pearsoni blandus* Osgood, Field Mus. N.H. Zool. *18*, 2: 269. Muong Moun, south of Lai Chau, Tonkin, Indo-China.
Range: Manipur, Western Burma, Northern Indo-China.

This species is not well known. The few specimens examined indicate that *trichotis* is small-toothed, and *pearsoni* has larger teeth. I should not care to go further than that in racial details.

Genus **TROGOPTERUS** Heude, 1898

1898. *Trogopterus* Heude, Mém. H.N. Emp. Chinois, *4*, 1: 46–47. *Pteromys xanthipes* Milne-Edwards.

1 species: *Trogopterus xanthipes*, page 460

Trogopterus xanthipes Milne-Edwards, 1867 Complex-toothed Flying Squirrel

Approximate distribution of species: China, from Southern Tibet, Yunnan, Szechuan and Shensi to Chihli.

TROGOPTERUS XANTHIPES Milne-Edwards, 1867

1867. *Pteromys xanthipes* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 376. Forests of North-Eastern Hopei (Chihli), China.

1914. *Trogopterus mordax* Thomas, J. Bombay N.H. Soc. *23*, 2: 230. Ichang, Hupeh, China.

1914. *Trogopterus himalaicus* Thomas, J. Bombay N.H. Soc. *23*, 2: 231. Gyantse, Chumbi Valley, Southern Tibet.

1923. *Trogopterus edithae* Thomas, Ann. Mag. N.H. *11:* 658. North-western flank Likiang Range, Yunnan, China.

1923. *Trogopterus minax* Thomas, Ann. Mag. N.H. *11:* 660. Near Wan Chuen, Upper Min River, Szechuan, China.

Range: as above. I do not believe this species can be divided into definable races.

Genus **PETAURISTA** Link, 1795

1795. *Petaurista* Link, Beytr. Naturgesch. *1*, 2: 52 (nom. nud.), 78. *Sciurus petaurista* Pallas.

5 species: *Petaurista alborufus*, page 463
Petaurista elegans, page 460
Petaurista leucogenys, page 464
Petaurista magnificus, page 464
Petaurista petaurista, page 461

For review of the species, see Ellerman, 1949, *Fam. Gen. Liv. Rodents, 3:* 7. For characters of the Indian forms, including four of the above species, see Ellerman, 1947, *J. Mamm. 28:* 253–255. The remaining species, *P. leucogenys*, lacks the red and white colour pattern of *P. alborufus* and has proportionately longer nasals on average than any race known to me of the remainder. The type of *Petaurista alborufus barroni* is now in the British Museum. This form has been erroneously allocated (Ellerman, 1949). It proves to be a form of *alborufus* very close to *candidulus*. It is also near *P. petaurista annamensis* which lacks the white forehead characteristic of *alborufus* and *candidulus*.

Petaurista elegans Muller, 1839 Lesser Giant Flying Squirrel

Approximate distribution of species: Borneo, Sumatra, Java, Malay States, Natuna Islands, Indo-China, Yunnan, Szechuan, Burma, Nepal, Sikkim.

(Petaurista elegans elegans Müller, 1839. Extralimital)
1839. *Pteromys elegans* Müller, in Temminck, Verh. Nat. Ges. Ned. Overz. bezitt. Zool. (Zoogd. 1839), 35, 56 and 107, 112, pl. xvi, figs. 1–3. Nusa Kumbangan Island, off Southern Java.

Petaurista elegans caniceps Gray, 1842
1842. *Sciuropterus caniceps* Gray, Ann. Mag. N.H. *10:* 262. Nepal (type in B.M.).
1844. *Sciuropterus senex* Hodgson, J. Asiat. Soc. Bengal, *13:* 68. Nepal.
Range: Nepal, Sikkim.

Petaurista elegans marica Thomas, 1912
1912. *Petaurista marica* Thomas, Ann. Mag. N.H. *9:* 687. Yunnan, China, probably near Mongtsze. Range: Southern Yunnan, into Shan States, Burma; and Laos, Tonkin.

Petaurista elegans sybilla Thomas, 1916
1916. *Petaurista sybilla* Thomas, J. Bombay N.H. Soc. *24*, 3: 424. Fifty miles west of Kindat, Chin Hills, Western Burma.

Petaurista elegans clarkei Thomas, 1922
1922. *Petaurista clarkei* Thomas, Ann. Mag. N.H. *10:* 396. Mekong Valley, Yunnan, 28° N., China. Range: Szechuan, Yunnan, and recorded from Northern Burma.

Petaurista elegans gorkhali Lindsay, 1929
1929. *Sciuropterus gorkhali* Lindsay, J. Bombay N.H. Soc. *33*, 3: 566. Apoon Sottidanda, Gorkha, 12,000 ft., Nepal.

Petaurista petaurista Pallas, 1766 Common Giant Flying Squirrel

Approximate distribution of species, as here understood: Borneo, Java, Sumatra (and a few small adjacent islands), Malay States, Siam, Indo-China; Yunnan, Fukien and Szechuan in China, Formosa; Burma, Assam, Nepal, Punjab, Kashmir, Peninsular India and Ceylon. Range includes Hainan.

(Petaurista petaurista petaurista Pallas, 1766. Extralimital)
1766. *Sciurus petaurista* Pallas, Misc. Zool. 54. Western Java.

Petaurista petaurista albiventer Gray, 1834
1834. *Pteromys albiventer* Gray, Illustr. Ind. Zool. pl. xviii. Type skull in B.M., labelled Nepal.
1844. *Pteromys inornatus* Geoffroy, in Jacquemont's Voyage, IV, Mamm. 62, Atlas, *2*, pl. iv. Northern India.
1911. *Petaurista birrelli* Wroughton, J. Bombay N.H. Soc. *20*, 4: 1014, 1019. Murree, Hazara, Punjab.
1911. *Petaurista fulvinus* Wroughton, J. Bombay N.H. Soc. *20*, 4: 1014, 1021. Simla, Punjab.
Range: Naga Hills in Assam; Nepal, Kumaon, Punjab, and many localities in Kashmir.

PETAURISTA PETAURISTA PHILIPPENSIS Elliot, 1839

1839. *Pteromys philippensis* Elliot, Madras J. Litt. & Sci. *10:* 217. Near Madras, India.
1842. *Pteromys oral* Tickell, Calcutta J.N.H. *2:* 401, pl. xi. Singhbum district, Orissa, India.
(?) 1843. *Pteromys griseiventer* Gray, List Mamm. 133.
1911. *Petaurista cinderella* Wroughton, J. Bombay N.H. Soc. *20*, 4: 1014, 1018. The Dangs, Surat district, Bombay Presidency.

Range: from Southern Peninsular India northwards to Orissa and Surat district at least.

PETAURISTA PETAURISTA CINERACEUS Blyth, 1847

1847. *Pteromys petaurista* var. *cineraceus* Blyth, J. Asiat. Soc. Bengal, *16:* 865. Arakan, Burma. Range: Burma (Pegu district, Toungoo, etc.), Tenasserim, part.

PETAURISTA PETAURISTA GRANDIS Swinhoe, 1862

1862. *Pteromys grandis* Swinhoe, P.Z.S. 358, pl. 45. Formosa.

PETAURISTA PETAURISTA YUNANENSIS Anderson, 1875

1875. *Pteromys yunanensis* Anderson, Ann. Mag. N.H. *16:* 282. Momein, Yunnan.
1879. *Pteromys yunnanensis* Anderson, An. Zool. Res. West Yunnan: 282.

Range: Yunnan, Northern Burma, Mishmi.

PETAURISTA PETAURISTA LYLEI Bonhote, 1900

1900. *Petaurista lylei* Bonhote, P.Z.S. 192. Doi Sritepe, Chiengmai, Siam.
1914. *Petaurista lylei venningi* Thomas, J. Bombay N.H. Soc. *23*, 1: 27. Kalaw, Southern Shan States, Burma.
(?) 1925. *Petaurista lylei badiatus* Thomas, P.Z.S. 501. Ngai-tio, Tonkin, Indo-China.

Range: Annam, Laos, Tonkin, Shan States in Burma, Siam.

PETAURISTA PETAURISTA LANKA Wroughton, 1911

1911. *Petaurista lanka* Wroughton, J. Bombay N.H. Soc *20*, 4: 1014, 1017. Ceylon.

PETAURISTA PETAURISTA ANNAMENSIS Thomas, 1914

1914. *Petaurista annamensis* Thomas, J. Bombay N.H. Soc. *23*, 2: 204. Bali, Nhatrang, Southern Annam, Indo-China. Perhaps a doubtful form. Range includes Cochin-China.

PETAURISTA PETAURISTA MERGULUS Thomas, 1922

1922. *Petaurista mergulus* Thomas, J. Bombay N.H. Soc. *28*, 4: 1067. Ross Island, Mergui Archipelago. Range includes Tavoy Island.

PETAURISTA PETAURISTA RUFIPES G. Allen, 1925

1925. *Petaurista petaurista rufipes* G. Allen, Amer. Mus. Nov. 163, 13. Yungan, Fukien, South-Eastern China.

PETAURISTA (?) PETAURISTA HAINANA G. Allen, 1925

1925. *Petaurista hainana* G. Allen, Amer. Mus. Nov. 163, 14. Nam Fong, Hainan.

Petaurista petaurista reguli Thomas, 1926

1926. *Petaurista mergulus reguli* Thomas, J. Bombay N.H. Soc. *31:* 22. King Island, Mergui Archipelago.

Petaurista petaurista primrosei Thomas, 1926

1926. *Petaurista mergulus primrosei* Thomas, J. Bombay N.H. Soc. *31:* 22. Sullivan Island, Mergui Archipelago. Range includes Malcolm Island.

Petaurista petaurista rubicundus Howell, 1927

1927. *Petaurista rubicundus* Howell, J. Washington Acad. Sci. *17:* 82. Mapientung, about 60 miles north-west of Suifu, Szechuan, China.

Petaurista petaurista stockleyi Carter, 1933

1933. *Petaurista cineraceus stockleyi* Carter, Amer. Mus. Nov. 674, 1. Melamoong, 2,000 ft., North-Western Siam.

Petaurista petaurista miloni Bourret, 1942

1942. *Petaurista lylei miloni* Bourret, C.R. Conseil Rech. Sci. l'Indo-chine, 2e, 28. Diem-her, Lang-son Province, Indo-China. (*N.V.* Reference confirmed from Paris.)

Petaurista alborufus Milne-Edwards, 1870 Red-and-White Flying Squirrel

Approximate distribution of species: Formosa, Yunnan, Szechuan, Hupeh in China; also, as here understood, Assam, Burma, Tenasserim and Siam.

Petaurista alborufus alborufus Milne-Edwards, 1870

1870. *Pteromys alborufus* Milne-Edwards, C.R. Acad. Sci. Paris, *70:* 342. Moupin, Szechuan, China.

1906. *Pteromys alborusus* (sic) *leucocephalus* Hilzheimer, Zool. Anz. *29:* 298. (Locality supposed to be Tibet, where the species probably does not occur.)

1923. *Petaurista alborufus castaneus* Thomas, Ann. Mag. N.H. *12:* 172. Ichang, Hupeh, China.

1923. *Petaurista alborufus ochraspis* Thomas, Ann. Mag. N.H. *12:* 172. Likiang Range, Yunnan, China.

Range: Szechuan, Yunnan, Hupeh, in China.

Petaurista alborufus lena Thomas, 1907

1907. *Petaurista lena* Thomas, Ann. Mag. N.H. *20:* 522. Tapposha, Central Formosa.

Petaurista alborufus candidulus Wroughton, 1911

1911. *Petaurista candidulus* Wroughton, J. Bombay N.H. Soc. *20*, 4: 1014, 1022. Kindat, Western Burma.

1914. *Petaurista taylori* Thomas, J. Bombay N.H. Soc. *23*, 2: 205. Bankasun, Southern Tenasserim.

Range: Assam (Naga Hills), Cachar, Manipur, Western and Eastern Burma, Tenasserim.

PETAURISTA ALBORUFUS BARRONI Kloss, 1916

1916. *Petaurista annamensis barroni* Kloss, J.N.H. Soc. Siam, *2:* 33. Hup Bon, Sriracha, South-Eastern Siam. (For note on status of this form, see above, under discussion on species.)

Petaurista magnificus Hodgson, 1836 Hodgson's Flying Squirrel

Approximate distribution of species: Nepal, Sikkim.

PETAURISTA MAGNIFICUS Hodgson, 1836

1836. *Sciuropterus magnificus* Hodgson, J. Asiat. Soc. Bengal, *5:* 231. Nepal.
1842. *Sciuropterus nobilis* Gray, Ann. Mag. N.H. *10:* 263. Darjeeling.
1844. *Sciuropterus chrysotrix* Hodgson, J. Asiat. Soc. Bengal, *13:* 67.

Range: Nepal and Sikkim.

Petaurista leucogenys Temminck, 1827 Japanese Giant Flying Squirrel

Approximate distribution of species: Japan, Korea; Szechuan, Kansu, Yunnan, in China.

This is the second specific name in the genus. It is thought that *xanthotis* may be a valid race, but the material available is so poor for the other names (the typical race excepted) that they are only listed as nominal forms.

PETAURISTA LEUCOGENYS LEUCOGENYS Temminck, 1827

1827. *Pteromys leucogenys* Temminck, Mon. Mamm. I. Tab. Méthod. xxvii. 1845, Temminck in Siebold, Fauna Japon. (Mamm. 1): 46 (full description). Higo, Kiushiu, Japan (see Kuroda, 1938).

PETAURISTA LEUCOGENYS XANTHOTIS Milne-Edwards, 1872

1872. *Pteromys xanthotis* Milne-Edwards, Rech. Mamm. 301. Probably Moupin, Szechuan, China.
1908. *Pteromys filchnerinae* Matschie, Exped. Filchner to China & Tibet, Zool. Bot. Ergebn. 208. Siningfu, Upper Hwangho, Kansu, China.

Range: as above, and including Likiang Range, Yunnan.

PETAURISTA LEUCOGENYS OREAS Thomas, 1905

1905. *Petaurista leucogenys oreas* Thomas, Ann. Mag. N.H. *15:* 488. Wakayama, Southern Hondo, Japan.

PETAURISTA LEUCOGENYS TOSAE Thomas, 1905

1905. *Petaurista leucogenys tosae* Thomas, Ann. Mag. N.H. *15:* 488. Tosa, Shikoku Island, Japan.

PETAURISTA LEUCOGENYS NIKKONIS Thomas, 1905

1905. *Petaurista leucogenys nikkonis* Thomas, Ann Mag. N.H. *15:* 489. Nikko, Central Hondo, Japan.

PETAURISTA LEUCOGENYS HINTONI Mori, 1923

1923. *Petaurista leucogenys hintoni* Mori, J. Mamm. *4:* 191. Seoul, Korea.

1923. *Petaurista leucogenys thomasi* Kuroda & Mori, J. Mamm. *4:* 27. Not of Hose, 1900.

PETAURISTA LEUCOGENYS OSIUI Kuroda, 1938

1938. *Petaurista leucogenys osiui* Kuroda, List Japanese Mamm. Tokyo, 49. Ôsiu, Northern Hondo, Japan.

The following forms are not specifically identifiable, as there is no mention of their skulls in the original descriptions.

(PETAURISTA PECTORALIS Swinhoe, 1870)

1870. *Pteromys pectoralis* Swinhoe, P.Z.S. 634. Takow, South-Western Formosa.

(PETAURISTA WATASEI Mori, 1927)

1927. *Petaurista watasei* Mori, Annot. Zool. Jap. *2*, 2: 107. Type purchased at Mukden game market, Manchuria.

Two Formosan forms are known to me, *Petaurista petaurista grandis* and *P. alborufus lena*, and the form *pectoralis* seems to approach most closely *P. a. lena*, which it antedates. But there is no mention in the description of the strikingly white head which is such a characteristic feature of *lena*. Until the type can be examined and some details of the skull ascertained it seems impossible to allocate *pectoralis* with certainty either to *P. petaurista* or to *P. alborufus*. The describer of *P. watasei* compared it with *P. leucogenys* and *Aëretes melanopterus*, which should be very easily separable from each other cranially (but there is no mention of skull given in the description). Measurements of *watasei* compared with those given by G. Allen for *Aëretes* indicate that there is little difference between this and Mori's proposed form, except the larger head and body of *watasei* and its smaller foot, both of which might come under the heading of individual variation, but until the skull is examined it is impossible to allocate it with certainty.

Genus **AËRETES** G. Allen, 1940

1940. *Aëretes* G. Allen, Mamm. China & Mongolia, N.H. Cent. Asia, *11*, 1: vii, (nom. nud.), 2: 745. *Pteromys melanopterus* Milne-Edwards.

1 species: *Aëretes melanopterus*, page 465

Aëretes melanopterus Milne-Edwards, 1867

Approximate distribution of species: Chihli, North-Eastern China.

AËRETES MELANOPTERUS Milne-Edwards, 1867

1867. *Pteromys melanopterus* Milne-Edwards, Ann. Sci. Nat. Zool. *8:* 375. Forests of North-Eastern Hopei (Chihli), China.

1927. *Petaurista sulcatus* Howell, J. Washington Acad. Sci. *17:* 82. Hsinlungshan, 65 miles north-east of Pekin, Chihli, 3,000 ft., China.

Genus **PTEROMYS** Cuvier, 1800

1800. *Pteromys* G. Cuvier, Leçons Anat. Comp. *1*, tab. 1. *Sciurus volans* Linnaeus.
1824. *Sciuropterus* F. Cuvier, Dents des Mamm. 255. *Sciurus volans* Linnaeus.

Simpson (1945, 80, footnote) would use *Sciuropterus* for this genus on the ground that F. Cuvier (1824) selected *petaurista* as the type of *Pteromys*, thus apparently making *Pteromys* a synonym of *Petaurista*. But G. Cuvier (1800) gives the common name of *Pteromys* as "Polatouches". From this, and from what he says in his earlier work (1798, *Tabl. Élém. H.N.* 135) it is clear that *Sciurus volans* is the type species of *Pteromys*. In any case Fleming, 1822, *Philos. Zool. 2:* 190, confirms *volans* as the type. F. Cuvier's later selection therefore has no validity.

(*Pteromys* is stated by Sherborn to be a *nomen nudum*, but this is not so; see *Bull. Zool. Nomencl.* 1950, *4:* 309.)

2 species: *Pteromys momonga*, page 467
Pteromys volans, page 466

Pteromys momonga seems to be a valid species, see Ellerman, 1949, *Fam. Gen. Liv. Rodents*, *3:* 12, 13. It differs from those forms of *P. volans* represented in London, by shorter palatal foramina, smaller bullae, longer nasals, and narrower frontals (least interorbital width), in too marked a manner for it to be regarded as a race of *volans*.

Pteromys volans Linnaeus, 1758 Russian Flying Squirrel

Approximate distribution of species: Finland, Baltic States, Russia (from Arctic southwards roughly to Minsk-Smolensk-Ryazan-Kazan-Orenberg line). Wooded parts of Siberia, eastwards to Anadyr, Sakhalin, and south to Pavlodar district, Altai, Ussuri region, etc. Korea, Manchuria; probably also Kansu, Shansi and Chihli (no Chinese specimens examined). Northern Mongolia, according to Kuznetzov in Bobrinskii. Apparently occurs in Hokkaido, Japan. Chaworth-Musters considered that it probably did not occur in Northern Scandinavia.

Pteromys volans volans Linnaeus, 1758
1758. *Sciurus volans* Linnaeus, Syst. Nat. 10th ed. *1:* 64. Finland.
1808. *Pteromys russicus* Tiedemann, Zoologie, *1:* 451. Finland.
1822. *Pteromys sibiricus* Desmarest, Mammalogie, *2:* 342. Substitute for *volans*.
1842. *Pteromys vulgaris* Wagner, Schreb. Säugeth. Suppl. *3:* 228. Substitute for *volans*.
Range: Finland, Northern Russia, North-Western Siberia.

Pteromys volans buechneri Satunin, 1903
1903. *Pteromys buechneri* Satunin, Ann. Mus. St. Petersb. *7:* 549. Near Temple of Tschortentan, Kansu, China. Range includes Shansi.

Pteromys volans athene Thomas, 1907
1907. *Sciuropterus russicus athene* Thomas, P.Z.S. 409. Seventeen miles north-west of Korsakoff, Sakhalin Island, off Eastern Siberia.

Pteromys volans aluco Thomas, 1907
1907. *Sciuropterus aluco* Thomas, P.Z.S. 464. Kaloguai, 55 miles north-east of Seoul, Korea.

Pteromys volans incanus Miller, 1918

1918 *Pteromys volans incanus* Miller, Proc. Biol. Soc. Washington, *31:* 3. Verkhne Kolymsk, Eastern Siberia. Range: to Yenesei, and Stanovoi Range.

Pteromys volans orii Kuroda, 1921

1921. *Sciuropterus russicus orii* Kuroda, J. Mamm. *2:* 208. Uyenai, Iburi Province, Hokkaido, Japan. For specific status *fide* Kuroda.

Pteromys volans turovi Ognev, 1929

1929. *Pteromys volans turovi* Ognev, Bull. Pac. Sci. Fishery Res. Sta. Vladivostock, *2:* 14, 41. Peninsula Koty, Baikal, Siberia. Range: Altai, Sayan, Northern Mongolia, Transbaikalia, Upper Amur.

Pteromys volans betulinus Serebrennikov, 1930

1930. *Pteromys volans betulinus* Serebrennikov, Z. Säuget. *4:* 142. Pavlodar, Semipalatinsk, Siberia. Ranges north to Omsk and Novosibirsk.

Pteromys volans gubari Ognev, 1935

1935. *Pteromys volans gubari* Ognev, Bull. Soc. Nat. Moscow, *43 (1934)*, 304, 311. District of Troitzk, formerly Bijsk, Western Siberia. Range: lowland forest part of Western Siberia.

Pteromys volans arsenjevi Ognev, 1935

1935. *Pteromys volans arsenjevi* Ognev, Bull. Soc. Nat. Moscow, *43 (1934)*: 309, 314. River Kulumbe, Ussuri district, Eastern Siberia.

Pteromys volans ognevi Stroganov, 1936

1936. *Pteromys volans ognevi* Stroganov, Zool. J. Moscow, *15:* 539, 559. Lake Peno, Kalininschen region, in estuary of Volga, Tver Govt., Russia.

Pteromys volans wulungshanensis Mori, 1939

1939. *Sciuropterus wulungshanensis* Mori, Rept. First. Exp. Manchoukuo, *5*, 2: 59, pls. 5, 6. Mt. Wuling (Wulung), Hsinglunghsien, Southern Jehol, North-Eastern China.

Pteromys volans anadyrensis Ognev, 1940

1940. *Pteromys volans anadyrensis* Ognev, Mamm. U.S.S.R. *4:* 321. Village of Eropol, Anadyr region, extreme north-east Siberia.

Pteromys momonga Temminck, 1845 Smaller Japanese Flying Squirrel

Approximate distribution of species: Japan (Kiushiu, Hondo).

Pteromys momonga momonga Temminck, 1845

1845. *Pteromys* (*Sciuropterus*) *momonga* Temminck, Faun. Japon. 1 (Mamm.), 47, pl. 14. Kiushiu, Japan (see Kuroda, 1938, List Japanese Mammals).

1906. *Sciuropterus momonga amygdali* Thomas, P.Z.S. *1905*, 2: 344. Washikaguchi, Nara Ken, South-Central Hondo, Japan.

PTEROMYS MOMONGA INTERVENTUS Kuroda, 1941

1941. *Sciuropterus momonga interventus* Kuroda, Bull. Biogeogr. Soc. Tokyo, *11:* 113. Senjosen (2,000 ft.), Isai-Mura, Tohaku-gun, Tottori Prefecture, South-Western Hondo, Japan.

Genus **HYLOPETES** Thomas, 1908

1908. *Hylopetes* Thomas, Ann. Mag. N.H. *1*, 6. *Sciuropterus everetti* Thomas (the Natuna Island race of *H. lepidus* Horsfield).

1915. *Eoglaucomys* Howell, Proc. Biol. Soc. Washington, *28:* 109. *Sciuropterus fimbriatus* Gray. Valid as a subgenus.

5 species in the area covered by this list:

Hylopetes alboniger, page 469
Hylopetes fimbriatus, page 468
Hylopetes phayrei, page 469
Hylopetes lepidus, page 469
Hylopetes spadiceus, page 468

These species all occur in India, and specific characters are reviewed by Ellerman, 1947, *J. Mamm. 28:* 256, 257. Characters given there will roughly hold for all named forms of the present region and elsewhere.

Subgenus *EOGLAUCOMYS* Howell, 1915

Hylopetes fimbriatus Gray, 1837 — Smaller Kashmir Flying Squirrel

Approximate distribution of species: Afghanistan, Kashmir, Punjab.

HYLOPETES FIMBRIATUS FIMBRIATUS Gray, 1837

1837. *Sciuropterus fimbriatus* Gray, Ann. Mag. N.H. *1:* 584. Simla, Punjab. Range: Punjab and Kashmir (part).

HYLOPETES FIMBRIATUS BABERI Blyth, 1847

1847. *Sciuropterus baberi* Blyth, J. Asiat. Soc. Bengal, *16:* 866. Mountain district of Nijrow, Kohistan, Afghanistan. Range: Afghanistan and Kashmir (part).

Subgenus *HYLOPETES* Thomas, 1908

Hylopetes spadiceus Blyth, 1847 — Burmese Pygmy Flying Squirrel

Approximate distribution of species: Burma, Indo-China, Malay States.

HYLOPETES SPADICEUS Blyth, 1847

1847. *Sciuropterus spadiceus* Blyth, J. Asiat. Soc. Bengal, *16:* 867. Arakan, Burma. Range: Burma, Annam and Cochin-China in Indo-China and Malay States, according to Chasen.

On account of its enlarged bullae, it is not a race of *sagitta* as listed by Chasen. It occurs in Malay States with *H. platyurus* (Jentink, 1890, Sumatra), which is a race of *sagitta* as it is not specifically definable in British Museum material. No Malay States specimens for *spadiceus* examined.

Hylopetes lepidus Horsfield, 1822 Javan Lesser Flying Squirrel

Approximate distribution of species: Borneo, Natunas, Java, Sumatra, and a few small adjacent islands, Malay States, Tenasserim.

(Hylopetes lepidus lepidus Horsfield, 1822. Extralimital)

1822. *Pteromys lepidus* Horsfield, Zool. Res. Java, no. 5, pl. and text unnumbered. Java.

Hylopetes lepidus belone Thomas, 1908

1908. *Sciuropterus* (*Hylopetes*) *belone* Thomas, Ann. Mag. N.H. *2:* 305. Pulau Terutau (Island), Straits of Malacca. Range: to Tenasserim.

Hylopetes phayrei Blyth, 1859 Phayre's Flying Squirrel

Approximate distribution of species: Burma (probably also Manipur), Siam, Laos.

Hylopetes phayrei phayrei Blyth, 1859

1859. *Sciuropterus phayrei* Blyth, J. Asiat. Soc. Bengal, *28:* 278. Rangoon, Burma.
1914. *Sciuropterus phayrei probus* Thomas, J. Bombay N.H. Soc. *23*, 1: 28. Mt. Poppa, Burma.
1914. *Sciuropterus phayrei laotum* Thomas, J. Bombay N.H. Soc. *23*, 1: 28. Laos Mountains.

Range: Burma, Manipur ?, Siam, Laos.

Hylopetes phayrei anchises Allen & Coolidge, 1940

1940. *Pteromys phayrei anchises* Allen & Coolidge, Bull Mus. Comp. Zool. *87*, 3: 153. Mt. Angka, 4,300 ft., Northern Siam. (This form is not represented in the British Museum and has not been examined.)

Hylopetes alboniger Hodgson, 1836 Particoloured Flying Squirrel

Approximate distribution of species: Nepal, Assam, Northern Burma, Siam, Indo-China, Yunnan.

Hylopetes alboniger alboniger Hodgson, 1836

1836. *Sciuropterus alboniger* Hodgson, J. Asiat. Soc. Bengal, *5:* 231. Nepal.
1837. *Sciuroptera turnbulli* Gray, P.Z.S. 68. "India" (type in B.M.).
(?) 1837. *Pteromys leachii* Gray, Charlesw. Mag. N.H. *1:* 584.
1940. *Pteromys* (*Hylopetes*) *alboniger orinus* G. Allen, Mamm. China & Mongolia, N.H. Cent. Asia, 11, *2*: 723. Likiang Range, Yunnan, about 7,800 ft., China.

Range: Yunnan, Annam, Burma, Bhutan Duars, Mishmi, Assam, Manipur, Sikkim, Nepal.

HYLOPETES ALBONIGER LEONARDI Thomas, 1921

1921. *Pteromys* (*Hylopetes*) *leonardi* Thomas, J. Bombay N.H. Soc. *27*, 3: 501. Kachin Province, 28°5′ N., 97°25′ E., 8,000 ft., Northern Burma.

Genus **PETINOMYS** Thomas, 1908

1908. *Petinomys* Thomas, Ann. Mag. N.H. *1*: 6. *Sciuropterus lugens* Thomas (from Sipora Island, west of Sumatra).

? 1942. *Olisthomys* Carter, Amer. Mus. Nov. 1208, 2. *Pteromys* (*Olisthomys*) *morrisi* Carter.

4 species in the area covered by this list:

Petinomys electilis, page 470
Petinomys fuscocapillus, page 471
Petinomys morrisi, page 470
Petinomys setosus, page 470

Of these, I am only acquainted with the large *fuscocapillus* and the very small *setosus*. The Hainan form, *electilis*, medium in size, must be very near, or perhaps represents, the Javanese-Malayan *P. genibarbis* Horsfield, 1824. The newly described *morrisi* seems to belong here on account of the structure of the bullae as described. The greatest length of the skull of *P. morrisi* is 32.1 mm., and of *P. electilis* (G. Allen's figures) is 36.4–41.5 mm. Occipitonasal length of skull for *P. fuscocapillus* (B.M.) is 55.5–57.7 mm., for *P. setosus* (B.M.) is 27.5–30.6 mm.

Petinomys setosus Temminck, 1845 Temminck's Pygmy Flying Squirrel

Approximate distribution of species: Tenasserim, Malay States, Sumatra, Billiton Island, Borneo.

PETINOMYS SETOSUS SETOSUS Temminck, 1845. Extralimital)

1845. *Pteromys* (*Sciuropterus*) *setosus* Temminck, Fauna Japon. Mamm. 49. Padang, Western Sumatra.

PETINOMYS SETOSUS PHIPSONI Thomas, 1916

1916. *Pteromys* (*Petinomys*) *phipsoni* Thomas, J. Bombay N.H. Soc. *24*, 3: 421. Tenasserim Town, Tenasserim. Range: to Malay States.

Petinomys morrisi Carter, 1942

Distribution: Burma.

PETINOMYS MORRISI Carter, 1942

1942. *Pteromys* (*Olisthomys*) *morrisi* Carter, Amer. Mus. Nov. 1208, 2. Taro, 26°21′ N., 96°11′ E., Northern Burma.

Petinomys electilis G. Allen, 1925

Distribution: Island of Hainan.

PETINOMYS ELECTILIS G. Allen, 1925

1925. *Pteromys* (*Petinomys*) *electilis* G. Allen, Amer. Mus. Nov. 163, 16. Namfong, Island of Hainan, China.

Petinomys fuscocapillus Jerdon, 1847 Small Travancore Flying Squirrel

Approximate distribution of species: Southern India, Ceylon.

PETINOMYS FUSCOCAPILLUS FUSCOCAPILLUS Jerdon, 1847

1847. *Sciuropterus fuscocapillus* Jerdon, in Blyth, J. Asiat. Soc. Bengal, *16:* 867. Southern India. (Specimen in B.M. from Travancore.)

PETINOMYS FUSCOCAPILLUS LAYARDI Kelaart, 1850

1850. *Sciuropterus layardi* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 215 (328 of 1887 reprint). Ceylon.

Genus **EUPETAURUS** Thomas, 1888

1888. *Eupetaurus* Thomas, J. Asiat. Soc. Bengal, *57*, 2 (3): 256. *Eupetaurus cinereus* Thomas.

1 species: *Eupetaurus cinereus*, page 471

Eupetaurus cinereus Thomas, 1888 Woolly Flying Squirrel

Approximate distribution of species: Kashmir.

EUPETAURUS CINEREUS Thomas, 1888

1888. *Eupetaurus cinereus* Thomas, J. Asiat. Soc. Bengal, *57*, 2 (3): 258, pls. xxii, xxiii. Gilgit Valley, Kashmir. Range includes Chitral, Kashmir.

The remaining genera belong to the normal section of the family, and lack the flying membrane. Simpson (1945) lists the genera in various "tribes", following Pocock's arrangement of the genera which was partly geographical and partly based on the structure of the baculum, which is unknown in many species and some genera; a most unconvincing arrangement. For key to genera, see Ellerman (1940, 305).

Genus **SCIURUS** Linnaeus, 1758

1758. *Sciurus* Linnaeus, Syst. Nat. 10th ed. *1:* 63. *Sciurus vulgaris* Linnaeus.
1824. *Macroxus* F. Cuvier, Dents des Mamm. 255. *Sciurus aestuans* Linnaeus, from South America.
1893. *Aphrontis* Schulze, Z. Nat. Leipzig, *66*, 165 (*vulgaris*).
1909. *Tenes* Thomas, Ann. Mag. N.H. *3:* 468 (footnote). *Sciurus persicus* of Thomas (not of Erxleben, which is a Dormouse, *Glis glis persicus*) = *Sciurus anomalus* Güldenstaedt. Valid as a subgenus.
1935. *Oreosciurus* Ognev, Abstr. Works Zool. Inst. Moscow, 2, 50 (*anomalus*). Numerous other subgeneric names or synonyms are based on species from America.

2 species in the area covered by this list:

Sciurus anomalus, page 477
Sciurus vulgaris, page 472

Subgenus *SCIURUS* Linnaeus, 1758

Sciurus vulgaris Linnaeus, 1758 Red Squirrel

Approximate distribution of species: Britain and Ireland, France, Spain, Italy, Switzerland, Norway, Sweden, Denmark, Finland, Germany, Holland, Hungary, Poland, Yugoslavia, Rumania, Bulgaria, Greece; Russia, from Arctic to Ukraine, Crimea and Northern Caucasus; wooded parts of Siberia and Far East to Kamtchatka, Anadyr region, and Sakhalin; Manchuria, Korea, Mongolia, Chihli (in North-Eastern China) and Japan. (Apparently absent in steppe regions of Southern Russia.) (Kuznetzov states that the species was introduced into the Crimea, Caucasus and Northern Kazakstan, and gives as its Southern European Russian limit roughly Bessarabia-Kharkov-Voronej-Saratov-Kuibuishev line to Southern Urals. In Siberia it ranges to 70° N. in part.)

Sciurus vulgaris vulgaris Linnaeus, 1758

1758. *Sciurus vulgaris* Linnaeus, Syst. Nat. 10th ed. *1:* 63. Upsala, Sweden.
1792. *Sciurus vulgaris rufus* Kerr, Anim. Kingd. 255.
1827. *Sciurus vulgaris albonotatus* Billberg, Synopsis Faunae Scandinaviae, 2. Southern Sweden.
1827. *Sciurus vulgarus albus* Billberg, *loc. cit.* Skane, Sweden.
1827. *Sciurus vulgaris niger* Billberg, *loc. cit.* Skane, Sweden.
1843. *Sciurus europaeus* Gray, List Mamm. 139.
1899. *Sciurus vulgaris typicus* Barrett-Hamilton, P.Z.S. 6.

Range: Norway and Sweden, except extreme north.

Sciurus vulgaris exalbidus Pallas, 1779

1779. *Sciurus exalbidus* Pallas, Nov. Sp. Quad. Glir. Ord. 374. Pine woods along Ob and Irtish Rivers, Siberia. Range: woods along Irtish from Ust-Kamenogorsk to Pavlodar, and along Ob from Oirot-Tura to Kamen (Kuznetzov).

Sciurus vulgaris varius Gmelin, 1789

1762. *Sciurus varius* Brisson, Regn. Anim. 106. (Unavailable, see page 3.)
1789. *Sciurus vulgaris varius* Gmelin, Syst. Nat. *1:* 146. Northern Europe.

Range: Arctic Russia, Finland, Northern Norway and Sweden.

Sciurus vulgaris leucourus Kerr, 1792

1792. *Sciurus vulgaris leucourus* Kerr, Anim. Kingd. 256. England.
1896. *Sciurus vulgaris leucurus* Thomas, The Zoologist, *20:* 402.

Range: England, Scotland, Ireland.

Sciurus vulgaris argenteus Kerr, 1792

1792. *Sciurus vulgaris argenteus* Kerr, Anim. Kingd. 256. Upper parts of the River Ob, Siberia.

1901. *Sciurus martensi* Matschie, Arch. Nat. Berlin, 313. Lower Yenesei River. Siberia (left bank).

Range: Ob plain.

Sciurus vulgaris fusconigricans Dwigubski, 1804

1804. *Sciurus fusco-nigricans* Dwigubski, Prodr. Faunae Rossicae, 85. Bargusin, Transbaikalia. Range: to Mongolia.

Sciurus vulgaris fuscorubens Dwigubski, 1804

1804. *Sciurus fusco-rubens* Dwigubski, Prodr. Faunae Rossicae, 85. Eastern Siberia.

Sciurus vulgaris alpinus Desmarest, 1822

1822. *Sciurus alpinus* Desmarest, Mamm. *2:* 543. Pyrenees. Range: Spanish Pyrenees quoted in Miller, 1912.

Sciurus vulgaris italicus Bonaparte, 1838

1838. *Sciurus italicus* Bonaparte, Iconog. Faun. Ital. *1:* fasc. 23. Italy.

1907. *Sciurus meridionalis* Lucifero, Revista Ital. Sci. Nat. Siena, *27:* 45. Sila, Calabria, Italy.

Sciurus vulgaris lis Temminck, 1845

1845. *Sciurus lis* Temminck, Fauna Japon. Mamm. 45, pl. 12. figs. 1–4. Central Japan. Range: Hondo, Shikoku, Kiushiu.

Sciurus vulgaris fuscoater Altum, 1876

1804. *Sciurus vulgaris* var. *cinerea* Hermann, Observ. Zool. 65. ? Germany. Not of Linnaeus, 1766.

1876. *Sciurus vulgaris* var. *fuscoatra* Altum, Forstzoologie, 2nd ed. *1:* 75. Harz Mountains, Germany.

1876. *Sciurus vulgaris* var. *nigrescens* Altum, *loc. cit.* Silesia.

1876. *Sciurus vulgaris* var. *brunnea* Altum, *loc. cit.* Alsace-Lorraine.

1876. *Sciurus vulgaris* var. *graeca* Altum, *loc. cit.* Synonym of *brunnea.*

1905. *Sciurus vulgaris* var. *gotthardi* Fatio, Arch. Sci. Phys. Nat. Genève, *19,* 512. Southern slope of Mt. St. Gothard, Switzerland.

1907. *Sciurus vulgaris rutilans* Miller, Ann. Mag. N.H. *20:* 426. Rudolstadt, Thuringia, Germany.

Range: from Rumania, Hungary and Yugoslavia to France, Germany and Switzerland; also Poland.

Sciurus vulgaris infuscatus Cabrera, 1905

1905. *Sciurus infuscatus* Cabrera, Bol. Real. Soc. España H.N. Madrid, *4:* 227. Las Navas, Avila, Spain.

Sciurus vulgaris baeticus Cabrera, 1905

1905. *Sciurus baeticus* Cabrera, Bol. Real. Soc. España H.N. Madrid, *4:* 228. Alanis, Seville, Spain.

SCIURUS VULGARIS ORIENTIS Thomas, 1906

1906. *Sciurus vulgaris orientis* Thomas, P.Z.S. *1905, 2:* 345. Aoyama, Hokkaido, Japan.

SCIURUS VULGARIS ARCTICUS Trouessart, 1906

1906. *Sciurus vulgaris arcticus* Trouessart, Bull. Mus. H.N. Paris, *6:* 365. Lena River, Northern Siberia. (Kuznetzov does not list this as a valid form. The name may supersede *jacutensis*.)

SCIURUS VULGARIS RUPESTRIS Thomas, 1907

1907. *Sciurus vulgaris rupestris* Thomas, P.Z.S. 410. Dariné, 25 miles north-west of Korsakoff, Sakhalin Island, Eastern Siberia. Range: Sakhalin, Lower Amur, coast of Sea of Okhotsk (Kuznetzov).

SCIURUS VULGARIS RUSSUS Miller, 1907

1907. *Sciurus vulgaris russus* Miller, Ann. Mag. N.H. *20:* 427. Dinan, France. Range: France, Holland. Probably = *fuscoater*.

SCIURUS VULGARIS NUMANTIUS Miller, 1907

1907. *Sciurus vulgaris numantius* Miller, Ann. Mag. N.H. *20:* 428. Pinares de Quintanar de la Sierra, Burgos, Spain. Range: Northern Spain, probably into French Pyrenees.

SCIURUS VULGARIS LILAEUS Miller, 1907

1907. *Sciurus vulgaris lilaeus* Miller, Ann. Mag. N.H. *20:* 429. Agoriani, north side Lyakura (Parnassus) Mountains, Greece.

SCIURUS VULGARIS SEGURAE Miller, 1909

1909. *Sciurus vulgaris segurae* Miller, Ann. Mag. N.H. *3:* 418. Molinicos, Sierra de Segura, Albacete, Spain. (Perhaps = *numantius*.)

SCIURUS VULGARIS MANTCHURICUS Thomas, 1909

1909. *Sciurus vulgaris mantchuricus* Thomas, Ann. Mag. N.H. *4:* 501. Khingan Mountains, Manchuria. Range: to Amur, Ussuri regions.

A large, distinct race; in British Museum material only equalled in size of skull by the Spanish *infuscatus* (but we do not have *evalbidus*, which Kuznetzov says is the largest race in U.S.S.R.).

SCIURUS VULGARIS COREAE Sowerby, 1921

1921. *Sciurus vulgaris coreae* Sowerby, Ann. Mag. N.H. *7:* 252. Kaloguai, 55 miles north-east of Seoul, Korea.

1924. *Sciurus vulgaris coreanus* Kishida, Mon. Jap. Mamm. 153. (N.V.)

SCIURUS VULGARIS CHILIENSIS Sowerby, 1921

1921. *Sciurus vulgaris chiliensis* Sowerby, Ann. Mag. N.H. *7:* 253. Tungling, 75 miles north-east of Pekin, Chihli, 3,500 ft., China.

Sciurus vulgaris ameliae Cabrera, 1924

1924. *Sciurus vulgaris ameliae* Cabrera, Bol. Real. Soc. España H.N. Madrid, *24:* 420. Kontinoplo, Mt. Olympus, Greece.

Sciurus vulgaris croaticus Wettstein, 1927

1927. *Sciurus vulgaris croaticus* Wettstein, Anz. Akad. Wien, *1:* 1. Apatisanka Duliba Forest, south-east of Krasno, Croatia, Yugoslavia.

Sciurus vulgaris nadymensis Serebrennikov, 1928

1928. *Sciurus vulgaris nadymensis* Serebrennikov, C.R. Acad. Sci. Leningrad, 422. Nadym River, Western Siberia. (? = *argenteus*. Kuznetzov does not list it as a valid race.)

Sciurus vulgaris altaicus Serebrennikov, 1928

1928. *Sciurus vulgaris martensi* natio *altaicus* Serebrennikov, C.R. Acad. Sci. Leningrad, 422. Koksu River, mouth of Yamanush River, Altai Mountains. Range: Sayan and Altai Mountains, perhaps including Mongolian Altai.

Sciurus vulgaris ukrainicus Migulin, 1928

1928. *Sciurus vulgaris ukrainicus* Migulin, Prot. Plant Ukraine, *3–4*, 82. Sumsk district, Kharkov, Russia. Range: east of the Dnieper to Voronej Province.

Sciurus vulgaris kessleri Migulin, 1928

1928. *Sciurus vulgaris kessleri* Migulin, Prot. Plant Ukraine, 3–4, 83. Zhitomir and Shepetovka, Western Ukraine, Russia.

Sciurus vulgaris ognevi Migulin, 1928

1928. *Sciurus vulgaris ognevi* Migulin, Prot. Plant Ukraine, 3–4, 84. Former Bobrovsk Division of Kaluga Govt., Russia (Kuznetzov). Range: Central districts of European Russia.

Sciurus vulgaris jacutensis Ognev, 1929

1929. *Sciurus vulgaris jacutensis* Ognev, Bull. Pacif. Sta. Vladivostock, *2*, 5: 18, 41. Surroundings of Village Maghan, 8 versts from Yakutsk, Siberia.

Sciurus vulgaris dulkeiti Ognev, 1929

1929. *Sciurus vulgaris dulkeiti* Ognev, Zool. Anz. *83:* 76. Amuka River, Great Shantar Island, east coast Siberia. Probably a synonym of *rupestris*.

Sciurus vulgaris anadyrensis Ognev, 1929

1929. *Sciurus vulgaris jacutensis* natio *anadyrensis* Ognev, Zool. Anz. *83:* 83. Anadyr region, North-Eastern Siberia. (Kuznetzov lists this as a valid race.)

Sciurus vulgaris silanus Hecht, 1931

1931. *Sciurus vulgaris silanus* Hecht, Z. Säuget. Berlin, *6:* 238. Sila Mountains, Calabria, 1,400 m., Italy. Probably a synonym of *italicus*.

Sciurus vulgaris kalbinensis Selewin, 1934

1934. *Sciurus vulgaris kalbinensis* Selewin, Bull. Univ. Tachkent, 19, 75–77. Ayudinskii pine forest, west of Irtish, Altai, Siberia.

Sciurus vulgaris fedjushini Ognev, 1935

1935. *Sciurus vulgaris fedjushini* Ognev, Abstr. Works Zool. Inst. Moscow, *2:* 43. District of Minsk, Russia. Range: Ukraine, White Russia, Smolensk Province (in part).

Sciurus vulgaris formosovi Ognev, 1935

1935. *Sciurus vulgaris formosovi* Ognev, Abstr. Works Zool. Inst. Moscow, *2*: 44. Vetluga forests, Nijni-Novgorod, Russia. Range: North-Eastern European Russia.

Sciurus vulgaris bashkiricus Ognev, 1935

1935. *Sciurus vulgaris bashkiricus* Ognev, Abstr. Works Zool. Inst. Moscow, *2:* 45. Buzuluk pine forest, Samara, Russia.

1935. *Sciurus vulgaris bashkiricus* natio *uralensis* Ognev, *loc. cit.* 46. Miass, Zlatoustovsky district, Ural Province.

Range: Transvolga, Central and Southern Urals.

Sciurus vulgaris jenissejensis Ognev, 1935

1935. *Sciurus vulgaris jenissejensis* Ognev, Abstr. Works Zool. Inst. Moscow, *2:* 47. Lower Tungushka, Turuchansk, Siberia. Range: right bank of the Yenesei.

Sciurus vulgaris balcanicus Heinrich, 1936

1936. *Sciurus vulgaris balcanicus* Heinrich, Bull. Inst. R.H.N. Sophia, *9:* 41. Woods on lower reaches of River Kamchik, eastern Balkan Mountains, Bulgaria.

Sciurus vulgaris rhodopensis Heinrich, 1936

1936. *Sciurus vulgaris rhodopensis* Heinrich, Bull. Inst. R.H.N. Sophia, *9:* 42. Village of Tschepelare, Central Rhodope, Bulgaria.

Sciurus vulgaris istrandjae Heinrich, 1936

1936. *Sciurus vulgaris istrandjae* Heinrich, Bull. Inst. R.H.N. Sophia, *9:* 42. Village of Karamlek, Istranja-Dagh, Bulgaria.

(It seems improbable that there would be three valid races of this species in Bulgaria.)

Probably the following names also belong in this species:

Mustela calotus Hodgson, 1842, Calcutta J.N.H. *2:* 221, high regions of Central Asia, usually regarded as unidentifiable.

Sciurus talahutky Brass, 1911, Aus dem Reiche der Pelze, 586. "Aus dem südlichen Sibirien."

Sciurus vulgaris subalpinus Burg, 1920, Weidmann Bulach, 48, 386. (*N.V.*)

Sciurus vulgaris carpathicus "Pietruski, 1853", and *Sciurus vulgaris vilnensis* "Udzilla", Vinogradov & Argyropulo, 1941, Tab. Anal. Rongeurs, Faune U.S.S.R. n.s. *29*, 99. ? Both *nomina nuda*. The first from Litovsk Republic and Byelorussia.

Subgenus *TENES* Thomas, 1909

(Differing from *Sciurus* (*sensu stricto*) principally in having four instead of five upper cheekteeth, the small extra premolar being absent.)

Sciurus anomalus Schreber, 1785 Persian Squirrel

Approximate distribution of species: Transcaucasia, Persia, Asia Minor, Syria, Palestine.

Sciurus anomalus anomalus Schreber, 1785

1785. *Sciurus anomalus* Schreber, Säugeth. *4*: 781. Sabeka, 25 km. south-west of Kutais, Georgia, Caucasus.
1811. *Sciurus caucasicus* Pallas, Zoographia, *1:* 186.
1842. *Sciurus russatus* Wagner, Schreb. Säugeth. Suppl. *3:* 155.
(*Sciurus persicus auct.* but not of Erxleben, which was based on a Dormouse, *Glis glis*.)

Range: Caucasus and Asia Minor.

Sciurus anomalus syriacus Ehrenberg, 1828

1828. *Sciurus syriacus* Ehrenberg, Symb. Phys. *1*, pl. 8. Lebanon, Syria.
1867. *Sciurus historicus* Gray, Ann. Mag. N.H. *20:* 273. Syria.

Range: Syria.

Sciurus anomalus pallescens Gray, 1867

1867. *Macroxus syriacus* var. *pallescens* Gray, Ann. Mag. N.H. *20:* 285. Locality unknown. No locality on label of type specimen in the British Museum.
1875. *Sciurus fulvus* Blanford, Ann. Mag. N.H. *16:* 311. Shiraz, Persia.

Range: Persia and Palestine (B.M.).

The three races just listed are definable, on colour details, in British Museum material.

Genus **CALLOSCIURUS** Gray, 1867

1867. *Callosciurus* Gray, Ann. Mag. N.H. *20:* 277. *Sciurus rafflesii* Vigors & Horsfield (the Sumatran race of *C. prevosti* Desmarest, from Malacca).
1867. *Baginia* Gray, Ann. Mag. N.H. *20:* 279. *Sciurus notatus* Boddaert, from Java.
1867. *Erythrosciurus* Gray, Ann. Mag. N.H. *20:* 285. *Sciurus ferrugineus* Cuvier.
1880. *Heterosciurus* Trouessart, Le Naturaliste, *1:* 292. *Sciurus erythraeus* Pallas.
1906. *Tamiops* J. Allen, Bull. Amer. Mus. N.H. *22*: 475. *Tamiops macclellandi hainanus* Allen. Valid as a subgenus.
1915. *Tomeutes* Thomas, Ann. Mag. N.H. *15:* 385. *Sciurus lokroides* Hodgson.

8 species in the area covered by this list:

Callosciurus caniceps, page 485
Callosciurus erythraeus, page 478
Callosciurus finlaysoni, page 483
Callosciurus flavimanus, page 481
Callosciurus macclellandi, page 489
Callosciurus pygerythrus, page 487
Callosciurus quinquestriatus, page 488
Callosciurus swinhoei, page 490

For a key to these species, all of which occur in India, see Ellerman, 1947, *J. Mamm. 28:* 265–270. As regards *C. finlaysoni*, I thought formerly that this specific name should be restricted to a white-bellied squirrel from Siam, which is sometimes wholly white. I have since learned that evidently these squirrels undergo in part a seasonal colour change, and some forms can turn from white to pink in colour. I think, therefore, that the red-bellied, white-bellied and black-bellied Siamese squirrels (*finlaysoni*, *ferrugineus*, *germaini*) may all be one variable species, occurring with both *erythraeus* and *caniceps* but not, so far as I can trace, with each other. *C. finlaysoni* takes priority. See further notes below, on the definition of the species.

Subgenus *CALLOSCIURUS* Gray, 1867

Callosciurus erythraeus Pallas, 1779 Pallas's Squirrel

Approximate distribution of species: Assam, Burma; Szechuan, Yunnan, Hainan, Fukien, in China; Formosa; Indo-China, Siam, Malay States.

Callosciurus erythraeus erythraeus Pallas, 1779

1779. *Sciurus erythraeus* Pallas, Nov. Sp. Quad. Glir. Ord. 377. Locality unknown, but may be assumed to be some part of Assam.

1921. *Callosciurus erythraeus wellsi* Wroughton, J. Bombay N.H. Soc. *27:* 775. Shangpung, Jaintia Hills, Assam.

Range: Assam (part) (Kamrup, Garo, Khasi and Jaintia Hills).

Callosciurus erythraeus atrodorsalis Gray, 1842

1842. *Sciurus atrodorsalis* Gray, Ann. Mag. N.H. *10:* 263. Gray gave "Bhutan" as locality, but this is an error, and type locality is taken as Moulmein, Burma.

1891. *Sciurus atridorsalis* Blanford, Fauna Brit. India, Mamm. *2:* 382.

Range: Siam, Burma, Tenasserim.

Callosciurus erythraeus castaneoventris Gray, 1842

1842. *Sciurus castaneoventris* Gray, Ann. Mag. N.H. *10:* 263. Hainan.

1862. *Sciurus cinnamomeiventris* Swinhoe, P.Z.S. 349, 357.

1906. *Sciurus erythraeus insularis* J. Allen, Bull. Amer. Mus. N.H. *22:* 473. Lei-Mui-Mon, Hainan.

Range: Island of Hainan.

Callosciurus erythraeus erythrogaster Blyth, 1842

1842. *Sciurus erythrogaster* Blyth, J. Asiat. Soc. Bengal, *11:* 970. Manipur.

1867. *Macroxus punctatissimus* Gray, Ann. Mag. N.H. *20:* 283. Cachar, Assam.

1916. *Callosciurus erythraeus nagarum* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 228. Sadiya, Assam.

Range: Assam (in part), Manipur, Western Burma, and Annam in Indo-China.

Callosciurus erythraeus hyperythrus Blyth, 1855

1855. *Sciurus hyperythrus* Blyth, J. Asiat. Soc. Bengal, *24:* 474. ? Region of Sittang Valley, Tenasserim.

(?) 1903. *Sciurus rubeculus* Miller, Smiths. Misc. Coll. *45*: 22. Khow Sai Dow, Trang, Siamese Malaya. Range includes Tenasserim, in part.

The status of *hyperythrus* is uncertain.

Callosciurus erythraeus siamensis Gray, 1860

1860. *Sciurus siamensis* Gray, Ann. Mag. N.H. *5:* 500. Siam. Type in British Museum, but status uncertain.

Callosciurus erythraeus gordoni Anderson, 1871

(?) 1847. *Sciurus griseopectus* Blyth, J. Asiat. Soc. Bengal, *16:* 873. Locality unknown; based on a captive specimen, and best regarded as unidentifiable.

1871. *Sciurus gordoni* Anderson, P.Z.S. 140. Bhamo, Upper Burma.

Range: Yunnan, Northern Burma.

Callosciurus erythraeus intermedius Anderson, 1879

1879. *Sciurus gordoni* var. *intermedia* Anderson, Zool. & Anat. Res. Yunnan, 241. Dikrang Valley, Assam.

1911. *Sciurus castaneiventris* (sic) *bonhotei* Robinson & Wroughton, J. Fed. Malay St. Mus. *4:* 234. Chinchiensan, Szechuan, China.

1921. *Callosciurus castaneoventris aquilo* Wroughton, J. Bombay N.H. Soc. *27:* 601. Dibong River, Sadiya, 600 ft., Assam.

Range includes Mishmi, Northern Burma and Szechuan.

Callosciurus erythraeus bhutanensis Bonhote, 1901

1901. *Sciurus erythraeus bhutanensis* Bonhote, Ann. Mag. N.H. *7:* 161. Bhutan.

Callosciurus erythraeus ningpoensis Bonhote, 1901

1901. *Sciurus castaneoventris ningpoensis* Bonhote, Ann. Mag. N.H. *7:* 163. Ningpo, Chekiang, South-Eastern China. (Perhaps not distinguishable from *gordoni*.)

1905. *Sciurus tsingtanensis* Hilzheimer, Zool. Anz. *29:* 298. Corrected to *Sciurus tsingtauensis* Hilzheimer, 1906, Abh. Ber. Mus. Natur. u. Heimatk. Magdeburg *1:* 172. Tsingtao, China (but G. Allen (1940, 632) says the type came from Nimrod Sound, a few miles from Ningpo).

Callosciurus erythraeus roberti Bonhote, 1901

1901. *Sciurus thaiwanensis roberti* Bonhote, Ann. Mag. N.H. *7:* 166. North-Western Formosa.

Callosciurus erythraeus centralis Bonhote, 1901

1901. *Sciurus thaiwanensis centralis* Bonhote, Ann. Mag. N.H. *7:* 166. Lak-ku-li, Central Formosa. This form is very near *gordoni*.

CALLOSCIURUS ERYTHRAEUS MICHIANUS Robinson & Wroughton, 1911

1911. *Sciurus castaneiventris michianus* Robinson & Wroughton, J. Fed. Malay States Mus. *4:* 234. Meechee, Yunnan. Probably indistinguishable from *gordoni.*

1912. *Sciurus castaneoventris haemobaphes* G. Allen, Proc. Biol. Soc. Washington, *25:* 177. Chihping, South-Eastern Yunnan, China.

CALLOSCIURUS ERYTHRAEUS CROTALIUS Thomas & Wroughton, 1916

1916. *Callosciurus erythraeus crotalius* Thomas & Wroughton, J. Bombay N.H. Soc. *24,* 2: 229. Hkamti, west bank Chindwin River, Burma. Range: Hkamti, and south of Hukong Valley, Western Burma.

CALLOSCIURUS ERYTHRAEUS KINNEARI Thomas & Wroughton, 1916

1916. *Callosciurus erythraeus kinneari* Thomas & Wroughton, J. Bombay N.H. Soc. *24,* 2: 229. Tatkon, west bank Chindwin River, Burma. Range: 40 miles west of Kindat, Nanthalet, and Tatkon, Western Burma.

CALLOSCIURUS ERYTHRAEUS ZIMMEENSIS Robinson & Wroughton, 1916

1916. *Callosciurus atrodorsalis zimmeensis* Robinson & Wroughton, J. Fed. Malay States Mus. *7:* 91. Chiengmai, Northern Siam.

CALLOSCIURUS ERYTHRAEUS TACHIN Kloss, 1916

1916. *Sciurus atrodorsalis tachin* Kloss, J.N.H. Soc. Siam, *2:* 178. Tachin, Central Siam.

CALLOSCIURUS ERYTHRAEUS PRANIS Kloss, 1916

1916. *Sciurus erythraeus pranis* Kloss, J.N.H. Soc. Siam, *2:* 178. Koh Lak, Pran, South-Western Siam.

CALLOSCIURUS ERYTHRAEUS THAI Kloss, 1917

1917. *Sciurus atrodorsalis thai* Kloss, J.N.H. Soc. Siam, *2:* 285. Raheng, Central Siam.

CALLOSCIURUS ERYTHRAEUS GLOVERI Thomas, 1921

1921. *Callosciurus erythraeus gloveri* Thomas, J. Bombay N.H. Soc. *27,* 3: 502. Nagchuka, Western Szechuan, 10,000 ft., China.

CALLOSCIURUS ERYTHRAEUS HENDEEI Osgood, 1932

1932. *Callosciurus erythraeus hendeei* Osgood, Field Mus. Publ. Zool. *18:* 270. Chapa, Tonkin. Range: Annam (part) and Tonkin, Indo-China.

CALLOSCIURUS ERYTHRAEUS NIGRIDORSALIS Kuroda, 1935

1935. *Callosciurus erythraeus nigridorsalis* Kuroda, J. Mamm. *16:* 281. Riran, Taito, South-Eastern Formosa.

In the British Museum there are very many specimens for this species, but the forms *tachin, thai* and *nigridorsalis* are not represented.

On the status of a few other forms previously referred to *C. erythraeus* but here transferred elsewhere, see Ellerman, *Fam. Gen. Liv. Rodents, 3:* 17. To these must be

added the form *styani*, as British Museum material indicates that it is nearer *C. pygerythrus* in cranial characters. As the *sinistralis* section of races occur with *atrodorsalis*, they are here transferred to *C. finlaysoni*, which is redefined.

Callosciurus flavimanus I. Geoffroy, 1831 Yellow-handed Squirrel

Essentially like *C. erythraeus* with which it occurs, but hands and feet white, red or sandy yellow, in contrast with limbs (instead of dark or not contrasted with limbs).

Approximate distribution of species, as here understood: Indo-China and Burma.

Callosciurus flavimanus flavimanus Geoffroy, 1831

1831. *Sciurus flavimanus* Geoffroy, in Bélanger, Voy. Indes Orient., Zool. *1:* 148. Tourane, Annam, Indo-China.

Callosciurus flavimanus phayrei Blyth, 1855

1855. *Sciurus phayrei* Blyth, J. Asiat. Soc. Bengal, *24:* 472, 476. Martaban, Burma (types in B.M.). Range: approximately, Tenasserim, northwards to Shan States.

Callosciurus flavimanus blanfordi Blyth, 1862

1862. *Sciurus blanfordii* Blyth, J. Asiat. Soc. Bengal, *31:* 333. Ava, Upper Burma.

Callosciurus flavimanus griseimanus Milne-Edwards, 1867

1867. *Sciurus griseimanus* Milne-Edwards, Rev. Zool. 195. Environs of Saigon, Cochin-China.

1867. *Macroxus leucopus* Gray, Ann. Mag. N.H. *20:* 282. Type skin in B.M., labelled Cambodia.

1907. *Sciurus vassali* Bonhote, P.Z.S. 9 (footnote). Ninh Hoa, Annam.

1907. *Sciurus leucopus fumigatus* Bonhote, Abstr. P.Z.S. 2. (Not of Gray, 1867.) Ninh Hoa, Annam.

Range: Cochin-China, Cambodia, and Annam (in part), Indo-China.

Callosciurus flavimanus sladeni Anderson, 1871

1871. *Sciurus sladeni* Anderson, P.Z.S. 139. Thizyain, Upper Burma.

1908. *Sciurus kemmisi* Wroughton, Ann. Mag. N.H. *2:* 491. Katha, Upper Irrawaddy, Burma.

1914. *Sciurus sladeni midas* Thomas, J. Bombay N.H. Soc. *23*, 2: 198. Myitkyina, Upper Burma.

1914. *Sciurus sladeni bartoni* Thomas, J. Bombay N.H. Soc. *23*, 2: 199. Uyu River, 50 miles east of Homalin, Upper Chindwin, Burma.

Range: Burma, country between Chindwin and Irrawaddy Rivers; specimens examined from Kindat, 20 miles south-east of it, Katha, Myitkyina, Schwebo, and Uyu River.

Callosciurus flavimanus harmandi Milne-Edwards, 1876

1876. *Sciurus harmandi* Milne-Edwards, Bull. Soc. Philom. *6*, 13: 8. Phu Quoc Island, off Cambodia, Indo-China.

Callosciurus flavimanus haringtoni Thomas, 1905

1905. *Sciurus haringtoni* Thomas, Ann. Mag. N.H. *16:* 314. Moungkan, Upper Chindwin, Burma.

1914. *Sciurus haringtoni solutus* Thomas, J. Bombay N.H. Soc. *23*, 2: 199. Homalin, Upper Chindwin, Burma.

1916. *Callosciurus sladeni careyi* Thomas & Wroughton J. Bombay N.H. Soc. *24*, 2: 233, pl. fig. 3. Tamanthe, Upper Chindwin.

Range: east side Chindwin River, Burma; specimens examined from Tamanthe, Moungkan, Homalin.

Callosciurus flavimanus rubex Thomas, 1914

1914. *Sciurus sladeni rubex* Thomas, J. Bombay N.H. Soc *23*, 2: 198. Yin, Lower Chindwin, Burma. (The locality in the description, Lonkin, Myitkyina district, is apparently an error, as the animal does not occur there.) A specimen also examined from Youngbintha, left bank Irrawaddy River.

Callosciurus flavimanus shortridgei Thomas & Wroughton, 1916

1916. *Callosciurus sladeni shortridgei* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 232, pl. fig. 1. Hkamti, Upper Chindwin, Burma.

1916. *Callosciurus sladeni fryanus* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 232, pl. fig. 2. Minsin, Upper Chindwin, Burma.

Range: Hkamti, Kauktaung, and Minsin, east side Chindwin River, Burma.

Callosciurus flavimanus millardi Thomas & Wroughton, 1916

1916. *Callosciurus sladeni millardi* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 234, pl. fig. 5. Pyaungbyin, 40 miles north of Kindat, Chindwin, Burma. Range: Pyaungbyin, and 100 miles north of Kindat, east side Chindwin River, Burma.

Callosciurus flavimanus phanrangis Robinson & Kloss, 1922

1922. *Callosciurus ferrugineus phanrangis* Robinson & Kloss, Ann. Mag. N.H. *9*: 91. Tour Cham, near Phanrang, Annam, Indo-China. Type in B.M.

Callosciurus flavimanus quantulus Thomas, 1927

1927. *Callosciurus flavimanus quantulus* Thomas, P.Z.S. 51. Xieng Khouang, Laos, Indo-China.

Callosciurus flavimanus contumax Thomas, 1927

1927. *Callosciurus flavimanus contumax* Thomas, P.Z.S. 52. Kontoum, south of Dakto, Annam, Indo-China.

Callosciurus flavimanus dactylinus Thomas, 1927

1927. *Callosciurus flavimanus dactylinus* Thomas, P.Z.S. 52. Dakto, Annam, Indo-China.

Callosciurus flavimanus pirata Thomas, 1929

1929. *Callosciurus flavimanus pirata* Thomas, P.Z.S. *1928:* 836. Napi, Laos. Range includes Hue, Annam. Probably a valid form. The last three listed above are much like typical *flavimanus*.

Callosciurus flavimanus bolovensis Osgood, 1932

1932. *Callosciurus flavimanus bolovensis* Osgood, Field Mus. Pub. Zool. *18:* 276. Paksong, Boloven Plateau, Laos, Indo-China.

Callosciurus flavimanus vernayi Carter, 1942

1942. *Callosciurus sladeni vernayi* Carter, Amer. Mus. Nov. 1208, 1. Tapa Hka, 26°9′ N., 96°16′ E., Northern Burma.

Callosciurus finlaysoni Horsfield, 1823 Finlayson's Squirrel

Approximate distribution of species, as here understood: Siam, Indo-China, Burma.

Provisionally, this species is here defined as with underparts white, or black, or red. If red, then the whole animal is mainly reddish or red, or if not, then root of tail whitish or pale (*sinistralis* and immediate allies only). This species occurs with *erythraeus* and *caniceps*, and *flavimanus*.

Callosciurus finlaysoni finlaysoni Horsfield, 1823

1823. *Sciurus finlaysonii* Horsfield, Zool. Res. Java, pt. 7 (unpaginated). Koh Chang (Island), off Siam.

1915. *Sciurus finlaysoni portus* Kloss, J.N.H. Soc. Siam, *1:* 158. Koh Chang, off Siam.

A small race, typically white or whitish in colour, apparently confined to Koh Chang.

Callosciurus finlaysoni ferrugineus F. Cuvier, 1829

1829. *Sciurus ferrugineus* F. Cuvier, H.N. Mamm. *3:* pl. 238. Pegu, Lower Burma.

1830. *Sciurus keraudrenii* Reynaud in Lesson, Cent. Zool. 11, pl. 1. Burma.

Range: Shan States, Pegu, Mt. Popa, Toungoo district, Rangoon, etc., in Burma.

The first name for the reddish subspecies.

Callosciurus finlaysoni cinnamomeus Temminck, 1853

1853. *Sciurus cinnamomeus* Temminck, Esq. Zool. Côte de Guiné, 250. Cambodia, Indo-China. Apparently a small, reddish race.

Callosciurus finlaysoni splendens Gray, 1861

1861. *Sciurus splendens* Gray, P.Z.S. 137. Southern Cambodia, Indo-China.

(?) 1929. *Callosciurus ferrugineus menamicus* Thomas, P.Z.S. *1928:* 839. Nan, Northern Siam.

Range: Siam (part) to Cambodia (part). A red race, near *ferrugineus*, but colour of feet different.

Callosciurus finlaysoni bocourti Milne-Edwards, 1867

1867. *Sciurus bocourtii* Milne-Edwards, Rev. Zool. 193. Ayutha, Siam.

1867. *Sciurus leucogaster* Milne-Edwards, *loc. cit.* Not of Cuvier, 1831.

1901. *Sciurus leucocephalus* Bonhote, P.Z.S. *1:* 54. Cheimat, River Menam, Siam.

(?) 1901. *Sciurus floweri* Bonhote, Ann. Mag. N.H. *7:* 455. Klong Morn, near Bangkok, Siam.

Range: Siam (part). Typically a white-bellied, dull (greyish) backed form.

Callosciurus finlaysoni germaini Milne-Edwards, 1867

1867. *Sciurus germanii* (misprint for *germaini*) Milne-Edwards, Rev. Zool. 193. Condor Island, off Cambodia. (Named for M. Germain.) The first named black subspecies.

Callosciurus finlaysoni nox Wroughton, 1908

1908. *Sciurus nox* Wroughton, Ann. Mag. N.H. *2:* 397. Sea coast south-east of Bangkok, Siam. Very like *germaini*.

Callosciurus finlaysoni sinistralis Wroughton, 1908

1908. *Sciurus bocourti sinistralis* Wroughton, Ann. Mag. N.H. *2:* 399. Pichit, Menam River, Central Siam. The first name for a race very similar to *C. erythraeus*, but occurring with a form of that, and differentiated by having the root of the tail whitish or pale.

Callosciurus finlaysoni dextralis Wroughton, 1908

1908. *Sciurus bocourti dextralis* Wroughton, Ann. Mag. N.H. *2:* 400. Kampeng, Lower Meping Valley, Siam. (? = *sinistralis*.)

Callosciurus finlaysoni lylei Wroughton, 1908

1908. *Sciurus bocourti lylei* Wroughton, Ann. Mag. N.H. *2:* 401. Chiengmai, Siam. (? = *sinistralis*.)

Callosciurus finlaysoni frandseni Kloss, 1916

1916. *Sciurus ferrugineus frandseni* Kloss, P.Z.S. 46. Koh Chang (Island), off Siam. (Belongs to *ferrugineus* section of races.)

Callosciurus finlaysoni albivexilli Kloss, 1916

1916. *Sciurus albivexilli* Kloss, P.Z.S. 47. Koh Kut (Island), South-Eastern Siam. Based on a black race.

Callosciurus finlaysoni tachardi Robinson, 1916

1916. *Callosciurus finlaysoni tachardi* Robinson, J. Fed. Malay States Mus. *7:* 36. R. Mee Nan, 30 m. N.E. of Utaradit, N. Siam. A white form.

Callosciurus finlaysoni trotteri Kloss, 1916

1916. *Sciurus finlaysoni trotteri* Kloss, J.N.H. Soc. Siam, *2:* 178. Koh Lan (Island), Inner Gulf of Siam.

Callosciurus finlaysoni grutei Gyldenstolpe, 1917

1917. *Sciurus bocourti grutei* Gyldenstolpe, K. Svenska Vet. Ak. Handl. *57*, 2: 37. Bang Hue Pong, Northern Siam.

Callosciurus finlaysoni prachin Kloss, 1920

1920. *Callosciurus finlaysoni prachin* Kloss, J.N.H. Soc. Siam, *4:* 103 (see also 1916, J.N.H. Soc. Siam, *2:* 16). Krabin, Central Siam. Possibly a synonym of *tachardi*. Based on a white form, with no seasonal colour change.

Callosciurus finlaysoni rajasima Kloss, 1920

1920. *Sciurus finlaysoni rajasima* Kloss, J.N.H. Soc. Siam, *4:* 103. Lat Bua Kao, Eastern Siam.

Callosciurus finlaysoni williamsoni Robinson & Kloss, 1922

1922. *Callosciurus ferrugineus williamsoni* Robinson & Kloss, Ann. Mag. N.H. *9:* 90. Xieng Khouang, Mekong River (Khet Don Heng), Laos, Indo-China.

Callosciurus finlaysoni herberti Robinson & Kloss, 1922

1922. *Callosciurus ferrugineus herberti* Robinson & Kloss, Ann. Mag. N.H. *9:* 90. Hup Bon, near Sriracha, South-Eastern Siam.

Callosciurus finlaysoni pierrei Robinson & Kloss, 1922

1922. *Callosciurus ferrugineus pierrei* Robinson & Kloss, Ann. Mag. N.H. *9:* 91. Phu Quoc Island, Cambodia.

Callosciurus finlaysoni cockerelli Thomas, 1928

1928. *Callosciurus cockerelli* Thomas, Ann. Mag. N.H. *2:* 100. Nan, Northern Siam. Typically, underparts white, back white with red middorsal area; another specimen, similar, but with red underparts. These specimens are possibly in stages of seasonal colour change. Chasen (1935) has suggested that this is an aberration of *menamicus* (which it antedates, but which seems not clearly distinguishable from *splendens*).

Callosciurus finlaysoni annellatus Thomas, 1929

1929. *Callosciurus ferrugineus annellatus* Thomas, P.Z.S. *1928:* 839. Angkor, Cambodia, Indo-China. Apparently a valid form, near *ferrugineus* and allies.

Callosciurus finlaysoni primus Allen & Coolidge, 1940

1940. *Callosciurus ferrugineus primus* Allen & Coolidge, Bull. Mus. Comp. Zool. *87:* 157. Mae Wan River, Mt. Sonket, Northern Siam.

Callosciurus caniceps Gray, 1842 Golden-backed Squirrel

Like *C. erythraeus* and allies above, with which it occurs extensively, but underparts essentially dull, not bright. If red appears on underparts it is normally only as flank-stripes outside a dull midventral area.

Approximate distribution of species, as here understood: Sikkim, Burma, Siam, Formosa, Malay States, and various small islands to the west of Malay States; Koh Phai (Island), off Siam.

Callosciurus caniceps caniceps Gray, 1842

1842. *Sciurus caniceps* Gray, Ann. Mag. N.H. *10:* 263. Gray gave Bhutan as type locality but this is an error, and the type locality is taken as Northern Tenasserim.

1847. *Sciurus chrysonotus* Blyth, J. Asiat. Soc. Bengal, *16:* 873. Amherst, Tenasserim.

1911. *Sciurus epomophorus fluminalis* Robinson & Wroughton, J. Fed. Malay States Mus. *4:* 233. Meping Rapids, Northern Siam.

Range: Tenasserim, and many places in Siam.

CALLOSCIURUS CANICEPS THAIWANENSIS Bonhote, 1901

1901. *Sciurus thaiwanensis* Bonhote, Ann. Mag. N.H. *7:* 165. Baksa, Southern Formosa.

CALLOSCIURUS CANICEPS DAVISONI Bonhote, 1901

1901. *Sciurus epomophorus davisoni* Bonhote, Ann. Mag. N.H. *7:* 273. Bankason, Tenasserim.

1922. *Callosciurus epomophorus tabaudius* Thomas, J. Bombay N.H. Soc. *28*, 4: 1067. Tavoy Island, Mergui Archipelago.

1923. *Callosciurus epomophorus hastilis* Thomas, J. Bombay N.H. Soc. *29*, 2: 377. Hastings Island, Mergui Archipelago.

Range: Siam (in part), Tenasserim, King Island, Tavoy Island, Hastings Island and Kisseraing Island, all Mergui Archipelago.

CALLOSCIURUS CANICEPS SULLIVANUS Miller, 1903

1903. *Sciurus sullivanus* Miller, Smiths. Misc. Coll. *45:* 17. Sullivan Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS DOMELICUS Miller, 1903

1903. *Sciurus domelicus* Miller, Smiths. Misc. Coll. *45:* 18. Domel Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS BENTINCANUS Miller, 1903

1903. *Sciurus bentincanus* Miller, Smiths. Misc. Coll. *45:* 19. Bentinck Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS MATTHAEUS Miller, 1903

1903. *Sciurus matthaeus* Miller, Smiths. Misc. Coll. *45:* 19. St. Matthew Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS LUCAS Miller, 1903

1903. *Sciurus lucas* Miller, Smiths. Misc. Coll. *45:* 20. St. Luke Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS CASENSIS Miller, 1903

1903. *Sciurus casensis* Miller, Smiths. Misc. Coll. *45:* 20. Chance Island, Mergui Archipelago.

CALLOSCIURUS CANICEPS ALTINSULARIS Miller, 1903

1903. *Sciurus altinsularis* Miller, Smiths. Misc. Coll. *45:* 21. High Island, Mergui Archipelago.

(Except for *sullivanus* which I think may be valid, Miller's races from the small islands of the Mergui Archipelago are not represented in London. I think it extremely improbable that all of them will be valid.)

Callosciurus caniceps shanicus Ryley, 1914

1914. *Sciurus atrodorsalis shanicus* Ryley, J. Bombay N.H. Soc. *22:* 663. Gokteik, 2,133 ft., Northern Shan States, Burma. Range: Shan States, Tenasserim (part) and Siam (part), apparently.

Callosciurus caniceps folletti Kloss, 1915

1915. *Sciurus finlaysoni folletti* Kloss, J.N.H. Soc. Siam, *1:* 159. Koh Phai (Island), Siam.

Callosciurus caniceps inexpectatus Kloss, 1916

1916. *Sciurus epomophorus inexpectatus* Kloss, J.N.H. Soc. Siam, *2:* 178. Koh Lak, Pran, South-Western Siam.

(?) 1917. *Sciurus helgei* Gyldenstolpe, K. Svenska Vet. Ak. Handl. *57*, 2: 34. South of Koh Lak, South-Western Siam.

Callosciurus caniceps crumpi Wroughton, 1916

1916. *Callosciurus crumpi* Wroughton, J. Bombay N.H. Soc. *24:* 425. Sedonchen, Sikkim, India.

Callosciurus pygerythrus Geoffroy, 1831 Irrawaddy Squirrel

This species, much like *caniceps* in some ways, may be distinguished by a cranial character from all those above. See Ellerman (1949, 16).

Approximate distribution of species, as here understood: Nepal, Assam, Burma, Indo-China, and apparently South-Eastern China.

Callosciurus pygerythrus pygerythrus Geoffroy, 1831

1831. *Sciurus pygerythrus* Geoffroy, in Bélanger, Voy. Indes Orient. *1:* 145, Atlas pl. 7. Pegu, Burma.

(?) 1867. *Macroxus inornatus* Gray, Ann. Mag. N.H. *20:* 282. Laos, Indo-China. Perhaps this name will stand instead of *imitator*, but the status of this form is uncertain.

Range: Pegu, Rangoon, Toungoo district of Burma.

Callosciurus pygerythrus lokroides Hodgson, 1836

1836. *Sciurus lokroides* Hodgson, J. Asiat. Soc. Bengal, *5:* 232. Nepal. (Type in B.M.)

1843. *Sciurus assamensis* Gray, ex M'Clelland, List Mamm. 143, *nom. nud.*

1867. *Macroxus similis* Gray, Ann. Mag. N.H. *20:* 281. Sikkim.

Range: Sikkim, Nepal, Bhutan Duars, Manipur, Northern Bengal.

Callosciurus pygerythrus blythi Tytler, 1854

1854. *Sciurus blythii* Tytler, Ann. Mag. N.H. *14:* 172. Dacca, Eastern Bengal.

1906. *Sciurus lokroides mearsi* Bonhote, Ann. Mag. N.H. *18:* 337. Chinhyit, Lower Chindwin, Burma.

1916. *Tomeutes mearsi virgo* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 3: 419, 421. Tatkon, Upper Chindwin, Burma.

Range: Assam, many localities, and Western Burma.

Callosciurus pygerythrus styani Thomas, 1894

1894. *Sciurus styani* Thomas, Ann. Mag. N.H. *13:* 363. Between Shanghai and Hangchow, probably Kahing, South-Eastern China.

1874. *Macroxus griseopectus* Milne-Edwards, Rech. H.N. Mamm. 305. Not of Blyth, 1847.

1905. *Herpestes leucurus* Hilzheimer, Zool. Anz. *29:* 299.

1906. *Herpestes albifer* Hilzheimer, Abh. Ber. Mus. Nat. Heimatk. Magdeburg, *1:* 177.

1927. *Callosciurus caniceps canigenus* Howell, J. Washington Acad. Sci. *17:* 81. Hayenhsien, Hangchow Bay, Chekiang, China.

1931. *Callosciurus erythraeus woodi* Harris, Occ. Pap. Mus. Zool. Univ. Mich. 228, 1. Lungtan, 25 miles east of Nangking, Kiangsu, China.

Range: Anhwei, Kiangsu, Chekiang, in South-Eastern China. Although currently regarded as a form of *erythraeus*, the few skulls available suggest that this is a form of *pygerythrus*.

Callosciurus pygerythrus stevensi Thomas, 1908

1908. *Sciurus stevensi* Thomas, J. Bombay N.H. Soc. *18*, 2: 246. Beni-Chang, 4,000 ft., Abor-Miri Hills, northern frontier of Upper Assam. Range: Northern Assam, Northern Burma.

Callosciurus pygerythrus janetta Thomas, 1914

1914. *Sciurus pygerythrus janetta* Thomas, J. Bombay N.H. Soc. *23*, 2: 203. Mandalay, 200 ft., Burma. Range: various localities in Burma, from Mt. Popa to east side Chindwin River, etc.

Callosciurus pygerythrus owensi Thomas & Wroughton, 1916

1916. *Tomeutes similis owensi* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 236. Minsin, east bank, Upper Chindwin, Burma.

Callosciurus pygerythrus bellona Thomas & Wroughton, 1916

1916. *Tomeutes mearsi bellona* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 3: 419, 420. Kin, west side Chindwin River, Burma.

Callosciurus pygerythrus imitator Thomas, 1925

1925. *Callosciurus imitator* Thomas, P.Z.S. 502. Thai-nien, Tonkin, Indo-China. Range includes Annam and Laos, Indo-China.

Callosciurus quinquestriatus Anderson, 1871 Anderson's Squirrel

Distinguishable from all allies by the underparts being banded black and white. Approximate distribution of species: Yunnan and Eastern Burma.

Callosciurus quinquestriatus quinquestriatus Anderson, 1871

1871. *Sciurus quinquestriatus* Anderson, P.Z.S. 142, pl. x. Ponsee, Kakhyen Hills, Yunnan-Burma border.

(?) 1911. *Sciurus beebei* J. Allen, Bull. Amer. Mus. N.H. *30:* 338. Sarawak (erroneous); probably from the Burma-Yunnan frontier. Anthony retains this as a valid

race, but material seen does not indicate the presence of more than one form in India.

1926. *Callosciurus quinquestriatus imarius* Thomas, Ann. Mag. N.H. *17:* 640. Western flank Mt. Imaw Bum, Kachin, 7,000 ft., Northern Burma.

Callosciurus quinquestriatus sylvester Thomas, 1926

1926. *Callosciurus quinquestriatus sylvester* Thomas, Ann. Mag. N.H. *17:* 641. Schweli-Salween Divide, Western Yunnan, 9,000 ft., China.

Not certainly identifiable:

Macroxus chinensis Gray, 1867, Ann. Mag. N.H. *20:* 282. "China."

Subgenus *TAMIOPS* J. Allen, 1906

Two species in this subgenus, differing in size, occur together in some places, and are retainable.

Callosciurus macclellandi Horsfield, 1839 Himalayan Striped Squirrel

Approximate distribution of species: Malay States, Siam, Indo-China, Burma, Assam, Nepal, Yunnan.

Callosciurus macclellandi macclellandi Horsfield, 1839

1839. *Sciurus macclellandi* Horsfield, P.Z.S. 152. Assam.

1842. *Sciurus pembertonii* Blyth, J. Asiat. Soc. Bengal, *11:* 887. Bhutan.

1900. *Sciurus macclellandi manipurensis* Bonhote, Ann. Mag. N.H. *5:* 51. Aimole, Manipur.

Range: Nepal, Sikkim, Bhutan, Mishmi, Manipur, Assam, Northern and Western Burma.

Callosciurus macclellandi barbei Blyth, 1847

1847. *Sciurus barbei* Blyth, J. Asiat. Soc. Bengal, *16:* 875. Ye, Tenasserim.

1901. *Sciurus macclellandi kongensis* Bonhote, P.Z.S. *1:* 55. Raheng, Siam.

Range: Tenasserim, Southern Burma, including King Island and Kisseraing Island, Mergui Archipelago, Siam, and into Southern Yunnan.

Callosciurus macclellandi rodolphei Milne-Edwards, 1867

1867. *Sciurus (Tamias) rodolphei* Milne-Edwards, Rev. Mag. Zool. *19:* 227. Cochin-China. Range includes Cambodia, Annam and Laos, Indo-China.

Callosciurus macclellandi liantis Kloss, 1919

1919. *Tamiops macclellandi liantis* Kloss, J.N.H. Soc. Siam, *3,* 4: 370. Satahip, near Cape Liant, South-Eastern Siam.

1920. *Tamiops lylei* Thomas, Ann. Mag. N.H. *5:* 307. Coast 50 miles south of Bangkok, South-Eastern Siam. Not of Wroughton, 1908.

1940. *Callosciurus holti* Ellerman, Fam. Gen. Liv. Rodents, *1:* 355. To replace *lylei,* preoccupied.

CALLOSCIURUS MACCLELLANDI INCONSTANS Thomas, 1920

1920. *Tamiops inconstans* Thomas, Ann. Mag. N.H. *5:* 306. Yunnan, China; probably near Mongtse (or Mengtsz). Ranges to Tonkin, Indo-China.

CALLOSCIURUS MACCLELLANDI DOLPHOIDES Kloss, 1921

1921. *Tamiops macclellandi dolphoides* Kloss, J.N.H. Soc. Siam, *4:* 101. Kompong Som Bon, Cambodia, Indo-China.

Callosciurus swinhoei Milne-Edwards, 1874 Swinhoe's Striped Squirrel

Approximate distribution of species: China, from Kansu and Chihli, south to Szechuan, Yunnan, Fukien and adjacent states, Hainan and Formosa; Northern Burma, Indo-China.

The race *vestitus* is not represented in London, but apart from that there seem far too many named forms in this species. In British Museum material, possibly *maritimus* and *hainanus* can be defined; the other forms seem scarcely to differ, and very little is known in this species about possible seasonal colour changes.

CALLOSCIURUS SWINHOEI SWINHOEI Milne-Edwards, 1874

1874. *Sciurus macclellandi* var. *swinhoei* Milne-Edwards, Rech. Mamm. 308. Moupin, Szechuan. Ranges into Yunnan (part); China.

CALLOSCIURUS SWINHOEI MARITIMUS Bonhote, 1900

1900. *Sciurus macclellandi maritimus* Bonhote, Ann. Mag. N.H. *5:* 51. Foochow, Fukien, China.

1900. *Sciurus macclellandi monticolus* Bonhote, Ann. Mag. N.H. *5:* 52. Ching-feng-ling, Fukien, China.

Range includes Adung Valley, Northern Burma.

CALLOSCIURUS SWINHOEI FORMOSANUS Bonhote, 1900

1900. *Sciurus macclellandi formosanus* Bonhote, Ann. Mag. N.H. *5:* 52. Northern Formosa.

1911. *Tamiops sauteri* J. Allen, Bull. Amer. Mus. N.H. *30:* 339. Chip Chip, Northern Formosa.

CALLOSCIURUS SWINHOEI HAINANUS J. Allen, 1906

1906. *Tamiops macclellandi hainanus* J. Allen, Bull. Amer. Mus. N.H. *22:* 476. Lei-Mui-Mon, mountains of central part of Island of Hainan.

1906. *Tamiops macclellandi riudoni* J. Allen, Bull. Amer. Mus. N.H. *22:* 477. Riudon, Plains of Hainan.

Range: Hainan, also Tonkin and Annam, Indo-China. (Position provisional, perhaps a race of *C. macclellandi.*)

CALLOSCIURUS SWINHOEI VESTITUS Miller, 1915

1915. *Tamiops vestitus* Miller, Proc. Biol. Soc. Washington, *28:* 115. Hsinlungshan, 65 miles north-east of Pekin, Chihli, China. Range: Kansu, and Chihli, Northern China.

Callosciurus swinhoei clarkei Thomas, 1920

1920. *Tamiops clarkei* Thomas, Ann. Mag. N.H. *5:* 304. Yangtse Valley, about 27°20′ N., 101° E., Northern Yunnan, China.

1920. *Tamiops maritimus forresti* Thomas, Ann. Mag. N.H. *5:* 305. Likiang Range, Yunnan.

Callosciurus (?) swinhoei spencei Thomas, 1921

1921. *Tamiops spencei* Thomas, J. Bombay N.H. Soc. *27,* 3: 503. North Kachin Province, 28°22′ N., 97°40′ E., 10,000 ft., Northern Burma. A doubtful form, based on a single skin; skull unknown.

Callosciurus swinhoei laotum Robinson & Kloss, 1922

1922. *Tamiops macclellandi laotum* Robinson & Kloss, Ann. Mag. N.H. *9:* 92. Pak Hin Bun, Mekong River, Laos, Indo-China.

Callosciurus swinhoei moi Robinson & Kloss, 1922

1922. *Tamiops macclellandi moi* Robinson & Kloss, Ann. Mag. N.H. *9:* 92. Langbian Plateau, Southern Annam, 5,500–6,500 ft., Indo-China.

Callosciurus swinhoei russeolus Jacobi, 1923

1923. *Tamiops macclellandi russeolus* Jacobi, Abh. Mus. Dresden, *16,* 1: 11. Southern foot of Tsalila Pass, on border between Szechuan and Yunnan, between Yangtze and Mekong Rivers, 3,500 m., China. (Unrepresented in London; G. Allen makes it a synonym of *swinhoei.*)

Callosciurus swinhoei olivaceus Osgood, 1932

1932. *Tamiops monticolus olivaceus* Osgood, Field Mus. Publ. Zool. *18:* 292. Mt. Fan Si Pan, near Chapa, Tonkin, Indo-China.

Genus **DREMOMYS** Heude, 1898

1898. *Dremomys* Heude, Mém. H.N. Emp. Chinois, *4,* 2: 54. *Sciurus pernyi* Milne-Edwards.

1908. *Zetis* Thomas, J. Bombay N.H. Soc. *18:* 245. *Sciurus rufigenis,* Blanford.

3 species in the area covered by this list:

Dremomys lokriah, page 491
Dremomys pernyi, page 492
Dremomys rufigenis, page 493

For key to these species, see Ellerman, 1947, *J. Mamm. 28:* 264.

Dremomys lokriah Hodgson, 1836 Orange-bellied Himalayan Squirrel

Approximate distribution of species: Nepal, Assam, Western Burma and South-Eastern Tibet (specimens from last-named in London).

Dremomys lokriah lokriah Hodgson, 1836

1836. *Sciurus lokriah* Hodgson, J. Asiat. Soc. Bengal, *5:* 232. Nepal.
1843. *Sciurus subflaviventris* Gray, Handlist Mamm. B.M. 144, *nom. nud.* Assam. See also Thomas, 1922, J. Bombay N.H. Soc. *28*, 2: 429.
1891. *Sciurus locriah* Blanford, Fauna Brit. India, Mamm. *2:* 376.
1916. *Dremomys lokriah bhotia* Wroughton, J. Bombay N.H. Soc. *24*, 3: 418–426. See also J. Bombay N.H. Soc. *24:* 639. Sedonchen, Sikkim.

Range: Nepal, Sikkim, Mishmi, to Northern Burma (Adung Valley).

Dremomys lokriah macmillani Thomas, 1916

1916. *Dremomys macmillani* Thomas, J. Bombay N.H. Soc. *24*, 2: 238. Tatkon, Western Burma.
1922. *Dremomys lokriah garonum* Thomas, J. Bombay N.H. Soc. *28*, 2: 430. Tura, Garo Hills, Assam.

Range: Assam, many localities, and Western Burma.

Dremomys pernyi Milne-Edwards, 1867 Perny's Long-nosed Squirrel

Approximate distribution of species: Szechuan, Hupeh, Yunnan, Fukien and most of the South-Eastern Chinese states, Formosa, Assam, Manipur and Burma.

It is my belief that this squirrel can only be divided into three definable races: the typical, which includes all named forms except the Formosan *owstoni*, a large form with orange-yellow underparts (whereas normally in the other forms they are grey), and *imus*, based on some unusually large skulls from Northern Burma.

Dremomys pernyi pernyi Milne-Edwards, 1867

1867. *Sciurus pernyi* Milne-Edwards, Rev. Mag. Zool. 230, pl. 19. Szechuan, China.
1912. *Dremomys pernyi flavior* G. Allen, Proc. Biol. Soc. Washington, *25:* 178. Mengtsz (or Mongtse), Southern Yunnan, China.
1912. *Dremomys senex* G. Allen, Mem. Mus. Harvard, *40*, 4: 229. Nantu, Ichang, Hupeh, China.
1916. *Dremomys pernyi griselda* Thomas, Ann. Mag. N.H. *17:* 392. Nagchuka, Western Szechuan, China.
1916. *Dremomys pernyi modestus* Thomas, Ann. Mag. N.H. *17:* 393. Suiyang, Kweichow, China.
1916. *Dremomys pernyi chintalis* Thomas, Ann. Mag. N.H. *17:* 394. Chinteh, Anhwei, China.
1916. *Dremomys pernyi calidior* Thomas, Ann. Mag. N.H. *17:* 394. Kuatun, Fukien, China.
1922. *Dremomys pernyi howelli* Thomas, Ann. Mag. N.H. *10:* 401. Machangkai, 25 miles south-west of Tengyuch, South-Western Yunnan, China.
1922. *Dremomys pernyi mentosus* Thomas, Ann. Mag. N.H. *10:* 401. Six miles west of Kindat, 6,000 ft., Western Burma.
1922. *Dremomys pernyi lichiensis* Thomas, Ann. Mag. N.H. *10:* 403. Likiang Range, Yunnan, China.
1928. *Dremomys rufigenis lentus* Howell, J. Washington Acad. Nat. Sci. *17:* 80. Wenchuanhsien, Szechuan, China.

Range: that of the species as given above, except Formosa and Northern Burma.

Dremomys pernyi owstoni Thomas, 1908

1908. *Zetis owstoni* Thomas, J. Bombay N.H. Soc. *18:* 248. Mt. Arizan, Central Formosa.

Dremomys pernyi imus Thomas, 1922

1922. *Dremomys pernyi imus* Thomas, Ann. Mag. N.H. *10:* 402. Mt. Imaw Bum, west flank, 7,000 ft., Northern Burma. Range: known from a few localities, including Adung Valley, in Upper Burma.

Dremomys rufigenis Blanford, 1878 Red-cheeked Squirrel

Approximate distribution of species: Malay States, Indo-China, Siam, Burma, Assam; Yunnan, Szechuan, Hupeh, Kweichow and Hainan, China.

Dremomys rufigenis rufigenis Blanford, 1878

1878. *Sciurus rufigenis* Blanford, J. Asiat. Soc. Bengal, *47*, 2: 156, pl. viii. Mt. Mulaiyit, Tenasserim.

(?) 1907. *Funambulus rufigenis fuscus* Bonhote, Abstr. P.Z.S. 2; P.Z.S. 10. Nhatrang, Bali, Annam, Indo-China.

(?) 1914. *Dremomys rufigenis ornatus* Thomas, J. Bombay N.H. Soc. *23*, 1: 26. Near Mengtsz (or Mongtse), Southern Yunnan, China.

1916. *Dremomys rufigenis opimus* Thomas, J. Bombay N.H. Soc. *24*, 2: 237. Hkamti, Upper Chindwin, Burma.

(?) 1921. *Dremomys rufigenis laomache* Thomas, Ann. Mag. N.H. *7:* 182. Ban Hoi Mak, near Pak Hin Bun, Mekong River, Laos, Indo-China.

Range: Assam (Naga Hills), Burma, Tenasserim, Siam, Indo-China (Tonkin, Annam, Laos). (The Burmese locality is Hkamti, in B.M. material.)

Dremomys rufigenis pyrrhomerus Thomas, 1895

1895. *Sciurus pyrrhomerus* Thomas, Ann. Mag. N.H. *16:* 242. Ichang, Hupeh, China. Range includes Kweichow and Szechuan, China.

Dremomys rufigenis riudonensis J. Allen, 1906

1906. *Funambulus riudonensis* J. Allen, Bull. Amer. Mus. N.H. *22:* 472. Riudon, Island of Hainan.

Dremomys rufigenis adamsoni Thomas, 1914

1914. *Dremomys rufigenis adamsoni* Thomas, J. Bombay N.H. Soc. *23*, 1: 25. Maymyo, Burma. Range: east side Chindwin River (Kindat), and Shan States, Burma.

Dremomys rufigenis melli Matschie, 1922

1922. *Dremomys melli* Matschie, Archiv. Naturg. *88*, 10: 23. Mountains east of Siudsau, Kwantung, China.

DREMOMYS (?) RUFIGENIS GULARIS Osgood, 1932

1932. *Dremomys pyrrhomerus gularis* Osgood, Field Mus. Publ. Zool. 18: 284. Mt. Fan Si Pan, near Chapa, Tonkin, Indo-China. A very distinct form (not specially resembling *pyrrhomerus*) and perhaps to be regarded as a species. It seems to occur with the typical race, though possibly at a different altitude. More specimens are needed to prove the status of this race.

Genus **FUNAMBULUS** Lesson, 1835

1835. *Funambulus* Lesson, Illustr. Zool. *15*, pl. 43, 2 pp. text. *Funambulus indicus* Lesson = *Sciurus palmarum* Linnaeus.

1893. *Eoxerus* Forsyth Major (*partim*), P.Z.S. 189.
(Type here designated as *Rhinosciurus laticaudatus* Müller, making it a synonym of *Rhinosciurus* Gray, 1843, or Blyth, 1855. Originally contained species which are now referred to *Funambulus*, *Rhinosciurus*, *Menetes* and *Lariscus*.)

1923. *Tamiodes* Pocock, P.Z.S. 215. *Sciurus tristriatus* Waterhouse.

5 species: *Funambulus layardi*, page 496
Funambulus palmarum, page 494
Funambulus pennanti, page 495
Funambulus sublineatus, page 496
Funambulus tristriatus, page 495

For key to species, see Ellerman, 1947, *J. Mamm. 28:* 261–263.

Funambulus palmarum Linnaeus, 1766 Indian Palm Squirrel

Approximate distribution of species: Ceylon and Peninsular India, north to Central Provinces and Bihar.

FUNAMBULUS PALMARUM PALMARUM Linnaeus, 1766

1766. *Sciurus palmarum* Linnaeus, Syst. Nat. 12th ed. *1:* 86. Madras, India.
1814. *Sciurus penicillatus* Leach, Zool. Misc. *1:* 6, pl. 1. Madras.
1835. *Sciurus indicus* Lesson, Illustr. Zool. *15:* pl. 43. Not of Erxleben, 1777.
1905. *Funambulus palmarum comorinus* Wroughton, J. Bombay N.H. Soc. *16:* 411. Trivandrum, Travancore, India.
1916. *Funambulus bengalensis* Wroughton, J. Bombay N.H. Soc. *24:* 648. Hazaribagh, Bihar, India.
1919. *Funambulus gossei* Wroughton & Davidson, J. Bombay N.H. Soc. *26*, 3: 730. Kotagiri, Nilgiri Hills, 4,100–4,500 ft., India.

Range: Bihar, and widely distributed in Southern India.

FUNAMBULUS PALMARUM BRODIEI Blyth, 1849

1849. *Sciurus brodiei* Blyth, J. Asiat. Soc. Bengal, *18:* 602. Point Pedro, Northern Ceylon.

FUNAMBULUS PALMARUM KELAARTI Layard, 1851

1851. *Sciurus kelaarti* Layard, in Blyth, J. Asiat. Soc. Bengal, *20:* 166. Hambanlotte, Ceylon.
1915. *Funambulus palmarum favonicus* Thomas & Wroughton, J. Bombay N.H. Soc. *24,* 1: 39. Udugama, Southern Province, Ceylon.
1915. *Funambulus palmarum olympius* Thomas & Wroughton, J. Bombay N.H. Soc. *24,* 1: 41. Urugalla, 1,600 ft., Highlands of Central Ceylon.

FUNAMBULUS PALMARUM BELLARICUS Wroughton, 1916

1916. *Funambulus palmarum bellaricus* Wroughton, J. Bombay N.H. Soc. *24:* 647. Vijayanagar, Bellary, India. Range: Bellary, Dharwar and Mysore districts, Peninsular India.

FUNAMBULUS PALMARUM ROBERTSONI Wroughton, 1916

1916. *Funambulus robertsoni* Wroughton, J. Bombay N.H. Soc. *24:* 647. Pachmarhi, Hoshangabad, Central Provinces, India.

FUNAMBULUS PALMARUM MATUGAMENSIS Lindsay, 1926

1926. *Funambulus palmarum matugamensis* Lindsay, J. Bombay N.H. Soc. *31:* 239. Anasigalla, Matugama, Western Province, Ceylon.

Funambulus pennanti Wroughton, 1905 Northern Palm Squirrel

Approximate distribution of species: India; Nepal Terai, Punjab, North-West Frontier, Baluchistan, Sind, Kumaon, Rajputana, Palanpur, Cutch, Kathiawar, Bengal (in part), Central Provinces, Bombay, south about to Dharwar.

FUNAMBULUS PENNANTI Wroughton, 1905

1905. *Funambulus pennantii* Wroughton, J. Bombay N.H. Soc. *16,* 3: 411. Mandvi Taluka, Surat district, Bombay Presidency, India.
1905. *Funambulus pennantii argentescens* Wroughton, J. Bombay N.H. Soc. *16,* 3: 413. Rawalpindi, Northern Punjab.
1916. *Funambulus pennantii lutescens* Wroughton, J. Bombay N.H. Soc. *24:* 430. Deesa, Palanpur, India.

Range: as in the species above.

Funambulus tristriatus Waterhouse, 1837 Jungle Striped Squirrel

Approximate distribution of species: Peninsular India; Travancore, Coorg, Mysore, Bombay Presidency, Dharwar, Madras, Western Ghats, etc.

FUNAMBULUS TRISTRIATUS TRISTRIATUS Waterhouse, 1837

1837. *Sciurus tristriatus* Waterhouse, Charlesworths Mag. N.H. *1:* 496–499. Madras, India (by designation).
1867. *Sciurus (Tamias) dussumieri* Milne-Edwards, Rev. Zool. *19:* 226. Malabar, India.

FUNAMBULUS TRISTRIATUS TRISTRIATUS [*contd.*]

1916. *Funambulus tristriatus numarius* Wroughton, J. Bombay N.H. Soc. *24:* 646. Helwak, Satara district, India.

1917. *Funambulus tristriatus annandalei* Robinson, Rec. Indian Mus. *13:* 41. Sasthancotta, west side Western Ghats, Travancore, India. (Not represented in London; status *fide* Wroughton.)

1919. *Funambulus thomasi* Wroughton & Davidson, J. Bombay N.H. Soc. *26*, 3: 729. Khandalla, Bombay Presidency, 2,000 ft., India.

Range: range of the species, approximately, excepting Coorg; not, apparently, occurring with the next form.

FUNAMBULUS TRISTRIATUS WROUGHTONI Ryley, 1913

1913. *Funambulus wroughtoni* Ryley, J. Bombay N.H. Soc. *22:* 437. Srimangala, Coorg, 2,782 ft., India. (Type in B.M.). Range: Coorg, also Shernelly, Cochin, and Kotengady Estate, Travancore, India.

Funambulus layardi Blyth, 1849 Layard's Striped Squirrel

Approximate distribution of species: Ceylon, Southern India.

FUNAMBULUS LAYARDI LAYARDI Blyth, 1849

1849. *Sciurus layardi* Blyth, J. Asiat. Soc. Bengal, *18:* 602. Ambegamoa Hills, Ceylon.

1924. *Funambulus layardi signatus* Thomas, Ann. Mag. N.H. 13: 241. Ratnapura, Southern Ceylon.

FUNAMBULUS LAYARDI DRAVIDIANUS Robinson, 1917

1917. *Funambulus layardi dravidianus* Robinson, Rec. Indian Mus. *13:* 42. West side Western Ghats, Travancore, India. A nominal form, based evidently on a single immature individual, but the name is available if the mainland form should prove retainable.

Funambulus sublineatus Waterhouse, 1838 Dusky Striped Squirrel

Approximate distribution of species: Ceylon, Southern India.

FUNAMBULUS SUBLINEATUS SUBLINEATUS Waterhouse, 1838

1838. *Sciurus sublineatus* Waterhouse, P.Z.S. 19. Nilgiri Hills, Southern India.

1841. *Sciurus delesserti* Gervais, L'Institut, 171. Nilgiri Hills.

1852. *Sciurus trilineatus* Kelaart, Prodr. Faun. Zeylan, 54. For status see Thomas & Wroughton, 1915, J. Bombay N.H. Soc. *24:* 38.

Range: Coorg, Nilgiri Hills, Travancore and Madras (part), etc., in Southern India.

FUNAMBULUS SUBLINEATUS OBSCURUS Pelzeln & Kohl, 1886

1886. *Sciurus palmarum* var. *obscura* Pelzeln & Kohl, Verh. Zool Bot. Ges. Wien, *35:* 525. Uplands of Ceylon.

1915. *Funambulus kathleenae* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 1: 38. Kottawa, Southern Province, Ceylon.

Genus **RATUFA** Gray, 1867

1867. *Ratufa* Gray, Ann. Mag. N.H. *20:* 273. *Sciurus indicus* Erxleben.
1867. *Rukaia* Gray, Ann. Mag. N.H. *20:* 275, 276. *Sciurus macrourus* Pennant.
1880. *Eosciurus* Trouessart, Le Naturaliste, *2*, 37: 291. *Sciurus bicolor* Sparrmann.

3 species in the area covered by this list:

Ratufa bicolor, page 498
Ratufa indica, page 497
Ratufa macroura, page 497

These three species, and the extralimital Malaysian *R. affinis* Raffles, 1822, which is most like *bicolor* but occurs with it extensively and always averages smaller in size of skull, are not very easy to define. For key to those here dealt with, see Ellerman, 1947, *J. Mamm. 28:* 258–260.

Ratufa macroura Pennant, 1769 Grizzled Indian (Giant) Squirrel

Approximate distribution of species: Ceylon and Southern India.

RATUFA MACROURA MACROURA Pennant, 1769

1769. *Sciurus macrourus* Pennant, Ind. Zool. *1:* pl. 1. Highlands of Ceylon.
1777. *Sciurus ceylonicus* Erxleben, Syst. Regn. An. 416. Ceylon.
1785. *Sciurus ceilonensis* Boddaert, Elench. Anim. *1:* 117. Ceylon.
1849. *Sciurus tennentii* Blyth, J. Asiat. Soc. Bengal, *18:* 600.
1852. *Sciurus macrourus* var. *montanus* Kelaart, Prod. Faun. Zeylan. 50.

Range: as restricted, only from Pattipola, Ceylon in British Museum material.

RATUFA MACROURA MELANOCHRA Thomas & Wroughton, 1915

1915. *Ratufa macroura melanochra* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 1: 36. Kottawa, Southern Province, Ceylon. Range: Ceylon (part).

RATUFA MACROURA DANDOLENA Thomas & Wroughton, 1915

1915. *Ratufa macroura dandolena* Thomas & Wroughton, J. Bombay N.H. Soc. *24*,1: 36. Wellawaya, Uva, Ceylon.
(?) 1931. *Ratufa macroura sinhala* Phillips, Ceylon J. Sci. Sec. B. *16:* 215. Nikawewa, in the Veddichchai Game Reserve, about 10 miles south of Kantalai, Eastern Province, Ceylon.

Range: Ceylon (part); Southern India, Nilgiri and Palni Hills, Eastern Ghats, etc.

(The name *albipes* Blyth, 1859, *J. Asiat. Soc. Bengal, 28:* 287, has been used for a form of this species, but the colour details in the original description suggest that the name was not based on a form of *macroura* at all; the type is lost, its locality is unknown, and the name appears to be preoccupied.) (*Nec* Wagner, 1837.)

Ratufa indica Erxleben, 1777 Indian Giant Squirrel, or Malabar Squirrel

Approximate distribution of species: Peninsular India, widely distributed; from Travancore northwards about to Orissa, Central Provinces, and Surat.

RATUFA INDICA INDICA Erxleben, 1777

1777. *Sciurus indicus* Erxleben, Syst. Regn. An. 420. Bombay Presidency, India.
1777. *Sciurus purpureus* Zimmermann, Spec. Zool. Geogr. Quad. 518. Bombay.[1]
1785. *Sciurus bombayus* Boddaert, Elench. Anim. *1:* 117.
1786. *Sciurus malabaricus* Scopoli, Del. Insub. *2:* 85.
1831. *Sciurus elphinstoni* Sykes, P.Z.S. 103. Deccan, India.
(?) 1897. *Sciurus indicus* var. *dealbatus* Blanford, J. Bombay N.H. Soc. *11:* 299, pl. A, fig. 1. Mahal Dangs (Surat), India; possibly based on albinistic individuals.

Range: specimens examined from Satara, Dharwar and Kanara districts, India; also Surat Dangs.

RATUFA INDICA MAXIMA Schreber, 1784

1784. *Sciurus maximus* Schreber, Saugeth. pl. 217B, *4*: 785 (1785). Malabar, India. Range: Nilgiri Hills, Cochin, Palni Hills, Travancore, Malabar, etc., in Southern India.

RATUFA INDICA BENGALENSIS Blanford, 1897

1897. *Sciurus indicus* var. *bengalensis* Blanford, J. Bombay N.H. Soc. *11:* 303, pl. B, fig. 2. Locality unknown. Range: specimens examined from Mysore, and Cutta in Coorg, India.

RATUFA INDICA SUPERANS Ryley, 1913

1913. *Ratufa indica superans* Ryley, J. Bombay N.H. Soc. *22*, 3: 436. Wotekolli, Southern Coorg, 2,000 ft., India. Range: specimens examined from Makut and Wotekolli, in Coorg.

RATUFA INDICA CENTRALIS Ryley, 1913

1913. *Ratufa indica centralis* Ryley, J. Bombay N.H. Soc. *22*, 3: 436. Bori, Hoshangabad, 1,600 ft., Central Provinces, India. Range: specimens examined from Orissa, Hoshangabad, Mysore, Nilgiri Hills, Coimbatore, Cuddapah, India. (In the Nilgiri Hills apparently occurring at different localities from those of *R. i. maxima*.)

Ratufa bicolor Sparrmann, 1778 Malayan Giant Squirrel

Approximate distribution of species: Natuna Islands, Java, Bali, Sumatra, Malay States, Siam, Indo-China, Hainan, Yunnan, Burma, Assam, Nepal. Also several small islands adjacent to Sumatra and Malay States.

(RATUFA BICOLOR BICOLOR Sparrmann, 1778. Extralimital)

1778. *Sciurus bicolor* Sparrmann, Götheborg. Samhalle Hand. (Wet. Afd.), *1:* 70. Anjer, Western Java. (This resembles the *phaeopepla* section of races more than the *gigantea* section, apparently, but differs in colour.)

[1] Unavailable: *Bull. Zool. Nomencl.* 1950, *4:* 547.

RATUFA BICOLOR GIGANTEA M'Clelland, 1839

1839. *Sciurus giganteus* M'Clelland, P.Z.S. 150. Assam.
1849. *Sciurus macruroides* Hodgson, J. Asiat. Soc. Bengal, *18:* 775. Bengal.
(?) 1906. *Ratufa gigantea hainana* J. Allen, Bull. Amer. Mus. N.H. *22:* 472. Cheteriang Island of Hainan.
1923. *Ratufa gigantea stigmosa* Thomas, J. Bombay N.H. Soc. *29*, 1: 86. Doi Sritepe, Chiengmai, Siam.

Range: Nepal, Sikkim, Assam, Mishmi, Burma, including Chindwin region, Shan States, Northern Burma, etc.; Tonkin, Laos and Annam, in Indo-China; Siam, Yunnan and (if *hainana* is the same) Hainan.

RATUFA BICOLOR PHAEOPEPLA Miller, 1913

1913. *Ratufa phaeopepla* Miller, Smiths. Misc. Coll. *61*, 21: 25. Sungei Balik, Southern Tenasserim.
1916. *Ratufa phaeopepla marana* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 227. Mt. Popa, Burma.

Range: Tenasserim, Mt. Popa and Toungoo districts of Burma, Peninsular Siam.

RATUFA BICOLOR CELAENOPEPLA Miller, 1913

1913. *Ratufa celaenopepla* Miller, Smiths. Misc. Coll. *61*, 21: 26. Domel Island, Mergui Archipelago. Range includes King Island, Kisseraing Island and Sullivan Island, Mergui Archipelago.

RATUFA BICOLOR LUTRINA Thomas & Wroughton, 1916

1916. *Ratufa gigantea lutrina* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 226. Tatkon, west bank Chindwin River, Burma. Range: Kabaw Valley and Tatkon, Burma; a doubtful race, very near *gigantea*.

RATUFA BICOLOR FELLI Thomas & Wroughton, 1916

1916. *Ratufa fellii* Thomas & Wroughton, J. Bombay N.H. Soc. *24*, 2: 226. Yin, east bank Lower Chindwin River, Burma.

RATUFA BICOLOR LEUCOGENYS Kloss, 1916

1916. *Ratufa melanopepla leucogenys* Kloss, P.Z.S. 43. Lem Ngop, South-Eastern Siam.

RATUFA BICOLOR SINUS Kloss, 1916

1916. *Ratufa melanopepla sinus* Kloss, P.Z.S. 44. Koh Kut (Island), Siam.

The last two seem very close to each other, and to an earlier-named extralimital form, *peninsulae* Miller, 1913, from Trang. This is very close to *phaeopepla*, but in our material averages smaller in length of skull.

RATUFA BICOLOR SMITHI Robinson & Kloss, 1922

1922. *Ratufa bicolor smithi* Robinson & Kloss, Ann. Mag. N.H. *9:* 89. Langbian Peaks, Southern Annam, Indo-China. Range includes Cochin-China.

Genus **MENETES** Thomas, 1908

1908. *Menetes* Thomas, J. Bombay N.H. Soc. *18*, 2: 244. *Sciurus berdmorei* Blyth.

1 species: *Menetes berdmorei*, page 500

Menetes berdmorei Blyth, 1849 Berdmore's Squirrel

Approximate distribution of species: Burma, Indo-China, Siam, Malay States.

MENETES BERDMOREI BERDMOREI Blyth, 1849

1849. *Sciurus berdmorei* Blyth, J. Asiat. Soc. Bengal, *18:* 603. Thoungyeen district, Lower Burma.

?1913. *Lariscus berdmorei amotus* Miller, Smiths. Misc. Coll. *61*, 21: 24. Domel Island, Mergui Archipelago.

Range: Burma, Tenasserim, Domel Island, Sullivan Island, Kisseraing Island (all Mergui Archipelago) and Siam (in part).

MENETES BERDMOREI MOUHOTEI Gray, 1861

1861. *Sciurus mouhotei* Gray, P.Z.S. 137. Cambodia, Indo-China.

1867. *Sciurus pyrrocephalus* Milne-Edwards, Rev. Mag. Zool. *2*, 19: 225. Cochin-China.

?1914. *Menetes berdmorei consularis* Thomas, J. Bombay N.H. Soc. *23*, 1: 24. Nan, 200 m., Northern Siam.

1914. *Menetes berdmorei moerescens* Thomas, J. Bombay N.H. Soc. *23*, 1: 25. Bali, near Nhatrang, Annam, Indo-China.

Range: Siam, Cochin-China, Annam and Cambodia.

MENETES BERDMOREI DECORATUS Thomas, 1914

1914. *Menetes berdmorei decoratus* Thomas, J. Bombay N.H. Soc. *23*, 1: 24. Mt. Popa, Burma. Only known from the type locality, up to about 4,000 ft.

MENETES BERDMOREI UMBROSUS Kloss, 1916

1916. *Menetes berdmorei umbrosus* Kloss, P.Z.S. 49. Koh Chang (Island), Siam.

MENETES BERDMOREI RUFESCENS Kloss, 1916

1916. *Menetes berdmorei rufescens* Kloss, P.Z.S. 50. Koh Kut (Island), Siam.

MENETES BERDMOREI KORATENSIS Gyldenstolpe, 1917

1917. *Menetes berdmorei koratensis* Gyldenstolpe, K. Svenska. Vet. Akad. Handl. *57*, 2: 39. Sakerat, near Korat, Eastern Siam.

Genus **ATLANTOXERUS** Forsyth Major, 1893

1893. *Atlantoxerus* Forsyth Major, P.Z.S. 189. *Sciurus getulus* Linnaeus.

1 species: *Atlantoxerus getulus*, page 501

Atlantoxerus getulus Linnaeus, 1758 Barbary Ground Squirrel

Approximate distribution of species: Morocco and Algeria. The only Squirrel in North Africa.

ATLANTOXERUS GETULUS Linnaeus, 1758

1758. *Sciurus getulus* Linnaeus, Syst. Nat. 10th ed. *1:* 64. Agadir, Morocco.
1842. *Xerus trivittatus* Gray, Ann. Mag. N.H. *10:* 264.

Range: "All the Grand Atlas from the Atlantic coast between Uad Tensift and Uad Sus, at the extreme east of the chain extending to the middle Atlas and the Algerian Sahara" (G. Allen, 1939).

Genus **SPERMOPHILOPSIS** Blasius, 1884

1884. *Spermophilopsis* Blasius, Tageblatt. Versamml. Deutsch. Naturf. Magdeburg, *57:* 325. *Arctomys leptodactylus* Lichtenstein.

1 species: *Spermophilopsis leptodactylus*, page 501

Spermophilopsis leptodactylus Lichtenstein, 1823 Long-clawed Ground Squirrel

Approximate distribution of species: Russian Turkestan, from east side Caspian Sea (Kara Kum) eastwards to Semirechyia, northwards about to south of Lake Balkash area, southwards into Afghanistan and, according to Kuznetzov, Northern Persia.

SPERMOPHILOPSIS LEPTODACTYLUS LEPTODACTYLUS Lichtenstein, 1823

1823. *Arctomys leptodactylus* Lichtenstein, Eversmann. Reise, 119. Karata, 140 versts north-west of Bokhara, Russian Turkestan.
1834. *Arctomys turcomanus* Eichwald, Reise, *1:* 305.

SPERMOPHILOPSIS LEPTODACTYLUS BACTRIANUS Scully, 1888

1888. *Spermophilus bactrianus* Scully, J. Asiat. Soc. Bengal, *56:* 70. Khamiab, Northern Afghanistan.

SPERMOPHILOPSIS LEPTODACTYLUS SCHUMAKOVI Satunin, 1908

1908. *Citellus* (*Spermophilopsis*) *schumakovi* Satunin, Mitt. Kaukas. Mus. 255. Kushka, Southern Transcaspia.

Genus **SCIUROTAMIAS** Miller, 1901

1901. *Sciurotamias* Miller, Proc. Biol. Soc. Washington, *14:* 23. *Sciurus davidianus* Milne-Edwards.
1922. *Rupestes* Thomas, Ann. Mag. N.H. *10:* 398. *Rupestes forresti* Thomas. Valid as a subgenus.

2 species: *Sciurotamias davidianus*, page 502
Sciurotamias forresti, page 502

This genus, compared with many genera of normal squirrels, related to *Sciurus*, is characterized by narrowed frontals and shortened toothrow. In these characters it resembles *Tamias*, from which it differs cranially by having the orbit not specially lengthened, and by larger size. The subgenus *Rupestes* has four (instead of five) upper cheekteeth, and the sole of the hindfoot is naked behind (not hairy).

Subgenus *SCIUROTAMIAS* Miller, 1901

Sciurotamias davidianus Milne-Edwards, 1867 Père David's Rock Squirrel

Approximate distribution of species: China, states of Kweichow, Szechuan, Hupeh, Kansu, Shensi, Shansi, Shantung, Chihli.

Sciurotamias davidianus davidianus Milne-Edwards, 1867

1867. *Sciurus davidianus* Milne-Elwards, Rev. Zool. Paris, *19:* 196. Mountains near Pekin, Chihli, China.

1898. *Dremomys latro* Heude, Mém. H.N. Emp. Chin. *4*, 2: 55, pl. 12, figs. 1–1e. ? Shantung, China.

Range: China, from Chihli through Shensi and Shansi to Kansu and Szechuan in part.

Sciurotamias davidianus consobrinus Milne-Edwards, 1868

1868. *Sciurus consobrinus* Milne-Edwards, Rech. H.N. Mamm. 305. Moupin, Szechuan, China.

1898. *Dremomys collaris* Heude, Mém. H.N. Emp. Chin. *4*, 2: 55, pl. 12, figs. 2–2c.

1912. *Sciurotamias davidanus* (sic) *thayeri* G. Allen, Mem. Mus. Comp. Zool. *40:* 231. Washan, Western Szechuan, China.

Range: Szechuan.

Sciurotamias davidianus saltitans Heude, 1898

1898. *Dremomys saltitans* Heude, Mém. H.N. Emp. Chin. *4*, 2: 55, pl. 12, figs. 4–4c. Hupeh, China.

1909. *Sciurotamias owstoni* J. Allen, Bull. Amer. Mus. N.H. *26:* 428. Taipai Shan Mountains, Shensi, China.

Range: Shensi, Hupeh and Kweichow, in China.

Subgenus *RUPESTES* Thomas, 1922

Sciurotamias forresti Thomas, 1922 Forrest's Rock Squirrel

Approximate distribution of species: Yunnan, China.

Sciurotamias forresti Thomas, 1922

1922. *Rupestes forresti* Thomas, Ann. Mag. N.H. *10:* 399. Mekong-Yangtze Divide, 27° N., Yunnan, China.

Genus **TAMIAS** Illiger, 1811

1811. *Tamias* Illiger, Prod. Syst. Mamm. et Avium, 83. *Sciurus striatus* Linnaeus (the North American Eastern Chipmunk).

1880. *Eutamias* Trouessart, Cat. Mamm. Viv. et Foss. Rodentia, in Bull. Soc. Études Sci. d'Angers, *10:* 86. *Sciurus striatus asiaticus* Gmelin. Valid as a subgenus.

Subgenus *EUTAMIAS* Trouessart, 1880

1 species in the area covered by this list:

Tamias sibiricus, page 503

Tamias sibiricus Laxmann, 1769 — Siberian Chipmunk

Approximate distribution of species: Northern Russia (eastwards from Rivers Dwina and Kama), wooded regions of Siberia and the Far East to Ussuri region (in Russia, westwards about to Vologda and Kazan, in much of Siberia north nearly to Arctic coast); Northern Japan, Sakhalin, Manchuria, Mongolia, and states of Chihli, Shansi, Shensi, Kansu and Szechuan, in China.

There seem to be too many subspecies standing in this species. In British Museum material, *lineatus* (together with certain Chinese races) can be defined when compared with the typical race, but all these forms seem very like each other as far as represented in London.

Tamias sibiricus sibiricus Laxmann, 1769

1769. *Sciurus sibiricus* Laxmann, Sibirische Briefe, 69. Barnaul, Siberia.

(?) 1912. *Eutamias asiaticus altaicus* Hollister, Proc. Biol. Soc. Washington, *25:* 183. Tapucha, 6,900 ft., Siberian Altai Mountains.

Range: Southern Urals, Western Siberia, Altai and Sayan Mountains, Transbaikalia, Mongolia.

Tamias sibiricus asiaticus Gmelin, 1788

1788. *Sciurus striatus* a. *asiaticus* Gmelin, Syst. Nat. 150. Gichiga, west coast Okhotsk Sea, Eastern Siberia. See J. Allen, 1903, Bull. Amer. Mus. N.H. *19:* 137.

1811. *Sciurus uthensis* Pallas, Zoogr. Rosso-Asiat. *1:* 189. Uda River, North-Eastern Siberia.

1899. *Tamias orientalis* Bonhote, Ann. Mag. N.H. *4:* 385. Sungatscha River, Upper Ussuri, Eastern Siberia.

Range includes Korea.

Tamias sibiricus lineatus Siebold, 1824

1824. *Myoxus lineatus* Siebold, Spic. Faun. Japon. in Diss. H.N. Japon. 13. Hokkaido, Japan. Range also includes Sakhalin and Amur region, according to Kuznetzov.

TAMIAS SIBIRICUS PALLASI Baird, 1856

1856. *Tamias pallasii* Baird, Ann. Rep. Smithsonian Inst. 55. New name to replace:
1779. *Sciurus striatus* Pallas, Nov. Spec. Quad. Glir. Ord. 378. Not of Linnaeus, 1758, from North America. Rivers Dwina and Kama, North-Eastern Russia.

Range: North-Eastern Russia, Urals and Western Siberia (excluding Altai).

TAMIAS SIBIRICUS SENESCENS Miller, 1898

1898. *Eutamias senescens* Miller, Proc. Acad. Nat. Sci. Philadelphia, 349. Fifteen miles west of Pekin, Chihli, China.
1908. *Eutamias asiaticus intercessor* Thomas, Abstr. P.Z.S. 44; P.Z.S. 969. Ningwufu, Shansi, China.

TAMIAS SIBIRICUS ORDINALIS Thomas, 1908

1908. *Eutamias asiaticus ordinalis* Thomas, Abstr. P.Z.S. 44; P.Z.S. 968. Yulinfu, Shensi, China. Range includes Shansi (part).

TAMIAS SIBIRICUS ALBOGULARIS J. Allen, 1909

1909. *Eutamias albogularis* J. Allen, Bull. Amer. Mus. N.H. *26:* 429. Taipai Shan, Shensi, China.
1927. *Eutamias asiaticus umbrosus* Howell, J. Washington Acad. Sci. *17:* 80. One hundred and forty miles south of Lanchowfu, vicinity of Archuen, Minshan Mountains, Kansu, China.

Range: to Szechuan.

TAMIAS SIBIRICUS OKADAE Kuroda, 1932

1932. *Eutamias asiaticus okadae* Kuroda, J. Mamm. *13:* 58. Mt. Chachanupuri, Kunashiri Island, South Kurile Islands.

TAMIAS SIBIRICUS JACUTENSIS Ognev, 1935

1935. *Eutamias sibiricus jacutensis* Ognev, Wiss. Ber. Moskauer Staats.Univ. *4:* 93. Near Yakutsk, Eastern Siberia.

Genus **CITELLUS** Oken, 1816

1816. *Citellus* Oken, Lehrbuch der Naturg. *3*, 2: 842. *Mus citellus* Linnaeus.
1817. *Anisonyx* Rafinesque, Amer. Monthly Mag. *2*, 1: 45. *Anisonyx brachyurus* Rafinesque = *Arctomys columbianus* Ord (the first-named of the North American species of the typical subgenus). (*N.V.*) Not of Latreille, 1807.
1825. *Spermophilus* F. Cuvier, Dents Mamm. 255. *Mus citellus* Linnaeus.
1844. *Colobotis* Brandt, Bull. Acad. Sci. St. Petersb. *2:* 365, 366. *Spermophilus fulvus* Lichtenstein.
1927. *Urocitellus* Obolensky, C.R. Acad. Leningrad, 192. *Spermophilus eversmanni* Brandt.

Hershkovitz, 1949, *J. Mamm. 30:* 296, proposed to discard Oken's names and states that the name *Citellus* should never have been used in place of Cuvier's name *Spermophilus*, which dates from 1825. The name *Citellus* has been used for this genus

by virtually all American, Russian, English and other authors for many years, and this seems clearly a case in which common sense and reason demand validation of the name *Citellus* as from Oken. We therefore retain this name until such time as a ruling on the point is given by the International Commission on Zoological Nomenclature.

7 species in the area covered by this list:

Citellus citellus, page 506
Citellus fulvus, page 512
Citellus major, page 510
Citellus pallidicauda, page 511
Citellus pygmaeus, page 508
Citellus suslicus, page 507
Citellus undulatus, page 511

I have seen no specimens of the Mongolian species *Citellus pallidicauda*, which seems from G. M. Allen's published measurements to be nearest *C. major* in size of hindfoot and average skull size (greatest length), and which has the soles of hindfeet bare. But its tail, as described, is all white except for the middle of the upper three-quarters which is rusty, and which lacks black hairs, and the feet are described as white. These characters contrast strongly with skins of *C. major* in the British Museum. Ognev, 1947, *Mamm. U.S.S.R. 5:* 76, makes *Citellus brevicauda* Brandt a full species, and lists *pallidicauda* as a race of it. But Obolensky, Vinogradov and Kuznetzov all make *brevicauda* a race of *pygmaeus*, and some old skins in the British Museum labelled *brevicauda*, one of which is "ex Brandt coll.", seem to represent *C. pygmaeus*.

Russian authors recognize ten species in this genus. I feel convinced that this is too many, and recognize only the following, which may be roughly distinguished as below:

Key to *Citellus* species represented in London:

1. Toothrow very long; molars very wide (width of M 3 about 3.5 mm. and over). (Soles of hindfeet bare.) *Citellus fulvus*
   Toothrow more moderate; width of M 3 less than 3.5 mm. ——2

2. Tail proportionately longer; frontals proportionately wider. (Soles of hindfeet hairy.) *Citellus undulatus*
   Tail proportionately considerably shorter; frontals normally proportionately narrower. ——3

3. Soles of hindfeet hairy, at least in part. ——4
   Soles of hindfeet naked. ——5

4. No specialized spotted colour pattern. *Citellus citellus*
   Clear light spots present all over the back *Citellus suslicus*

5. Smaller: occipitonasal length of skull not exceeding 45.3 mm. in British Museum material. *Citellus pygmaeus*
   Larger: occipitonasal length of skull not less than 45.7 mm. in British Museum material. *Citellus major*

Kuznetzov, in Bobrinskii, has shown that the name *Citellus major* of Pallas, 1779, replaces the more familiar name *rufescens*. It will therefore apparently be necessary to call the North American form *Citellus spilosoma major* Merriam, 1890, by the name *Citellus spilosoma marginatus* Bailey, 1902, which at present stands as a synonym of *major* Merriam, 1890 (not of Pallas, 1779). Kuznetzov also calls the Longtailed Souslik *Citellus undulatus* Pallas, 1779, instead of the more familiar name *eversmanni*.

Citellus citellus Linnaeus, 1766 European Souslik (Ground Squirrel)

Approximate distribution of species, as here understood: Germany, Poland, Austria, Slovakia, Yugoslavia, Rumania, Bulgaria, Greece, Turkey, Asia Minor, Palestine, Caucasus, Western Ukraine; Transbaikalia, Manchuria, Chihli, Shantung, Kansu, Shansi, Shensi and Mongolia.

Citellus citellus citellus Linnaeus, 1766

1766. *Mus citellus* Linnaeus, Syst. Nat. 12th ed. *1:* 80. Austria.
1779. *Mus citillus* Pallas, Nov. Sp. Quad. Glir. Ord. 119.

Range: Silesia and Bohemia, southwards through Balkans to European Turkey and Greece, eastwards to Western Ukraine.

Citellus citellus xanthoprymnus Bennett, 1835

1835. *Citillus* (sic) *xanthoprymna* Bennett, P.Z.S. 90. Erzerum, Asia Minor.
1905. "*Citellus concolor* Geoffroy" of Thomas, P.Z.S. *2:* 523. Not of Geoffroy.
1908. *Citellus schmidti* Satunin, Mitt. Kauk. Mus. *4:* 28. Village of Digor, on Kars Plateau (about 40°25′ N., 43°20′ E.), Armenia.

Range: Transcaucasia, Asia Minor and Palestine.

Citellus citellus dauricus Brandt, 1844

1844. *Spermophilus dauricus* Brandt, Bull. Phys. Math. Ac. Sci. St. Petersb. *2:* 379. Tarei-Nor, about 250 miles east of Lake Baikal, Transbaikalia. Range includes Mongolia.

Citellus citellus mongolicus Milne-Edwards, 1867

1867. *Spermophilus mongolicus* Milne-Edwards, Ann. Sci. Nat. 376. Suanhwafu, Chihli (Hopei), China. See G. Allen (1940, 703).
1908. *Citellus mongolicus umbratus* Thomas, Abstr. P.Z.S. 44; P.Z.S. 970. Tabool, 100 miles north-west of Kalgan, Mongolia.

Range: Mongolia (in part), Chihli, Shantung, Shensi (part), China.

Citellus citellus alaschanicus Büchner, 1888

1888. *Spermophilus alaschanicus* Buchner, Wiss. Res. Przewalski C. Asien Reisen, Zool. *1*, Saugeth. 11. Southern Alashan, Mongolia.
1925. *Citellus obscurus siccus* G. Allen, Amer. Mus. Nov. 163, 3. Ten miles west of Taiyuanfu, Shansi, China.

Citellus citellus obscurus Büchner, 1888

1888. *Spermophilus obscurus* Büchner, Wiss. Res. Przewalski C. Asien Reis. Zool. *1*, Säugeth. 17. Tschagryn-Gol, Kansu, China.

(?) 1927. *Citellus alaschanicus dilutus* Formosov, in Obolenski, C.R. Acad. Leningrad, 192. Ikhe Bogdo, Mongolian Altai.

Citellus citellus ramosus Thomas, 1909

1909. *Citellus mongolicus ramosus* Thomas, Ann. Mag. N.H. *4:* 501. Fan Chia Tun, Kirin Province, Manchuria.

Citellus citellus gradojevici Martino, 1929

1929. *Citellus citellus gradojevici* Martino, J. Mamm. *10:* 76. Djerdjelija, Macedonia, Southern Yugoslavia.

Citellus citellus istricus Calinescu, 1934

1934. *Citellus citellus istricus* Calinescu, Z. Säuget. *9*, 106. Munteni, Eastern Rumania.

Citellus citellus yamashinai Kuroda, 1939

1939. *Citellus dauricus yamashinai* Kuroda, Bull. Biogeogr. Soc. Tokyo, *9:* 11. Jalamute, east of Hai-la-erh, Northern Manchuria.

Citellus citellus karamani Martino, 1940

1940. *Citellus citellus karamani* Martino, Ann. Mag. N.H. *5:* 465. Karadjica Mountains, 30 km. south of Skoplje, 2,000 m., Southern Serbia, Yugoslavia.

Citellus citellus laskarevi Martino, 1940

1940. *Citellus citellus laskarevi* Martino, Ann. Mag. N.H. *5:* 468. Dolovo, Banat, Yugoslavia.

Citellus suslicus Güldenstaedt, 1770 Spotted Souslik

Approximate distribution of species: Poland, Eastern Rumania, Russia, from Ukraine northwards to River Oka, east to Volga (range as given by Kuznetzov is "northwards as far as Zhitomir, and the Rivers Oka and Volga; eastward to Volga from Kazan to Kamuishin; south to Kamuishin, Veshenskaya, Izyum, Khorol, the Lower Dnieper and Black Sea coast of Ukraine, west to River Prut").

Citellus suslicus suslicus Güldenstaedt, 1770

1770. *Mus suslica* Güldenstaedt, Nov. Comm. Acad. Sci. Petrop. *14*, 1: 389. Voronej Steppes, Russia.

1842. *Spermophilus citellus* var. *odessana* Nordmann in Demidoff Voy. Russ. Merid. Atlas (Hist. Nat.), pl. 3. Odessa, Russia.

1927. *Citellus suslicus averini* Migulin, Proc. N.H. Soc. Kharkov, *50*, 2: 46. Russka Lesonia, 18 km. north of Kharkov, Russia.

1927. *Citellus suslicus meridioccidentalis* Migulin, Proc. N.H. Soc. Kharkov, *50*, 2: 46. Environs of Odessa, Russia.

Range: Southern Russian range of the species as far north as Orlovsk and Tambov Provinces.

Citellus suslicus guttatus Pallas, 1770

1770. *Mus citellus* var. *guttatus* Pallas, Nov. Comm. Acad. Sci. Imp. Petrop. *14*, 1: 566, pl. 21, fig. 2. Rivers Pyana and Sura, Russia.

1792. *Arctomys citellus leucopictus* Donndorff, Zool. Beyträge, *1:* 486. Renaming of *guttatus*.

1845. *Spermophilus guttulatus* Schinz, Synop. Mamm. *2:* 70. Renaming of *guttatus*.

Range: northern part of Russian range of species.

Citellus suslicus volhynensis Reshetnik, 1946

1946. *Citellus suslica volhynensis* Reshetnik, Bull. Soc. Nat. Moscow Sect. Biol. N.S. *51*, 6: 25. Environs of Olyki, Volhyn region on borders of Polesie and the woodland steppe, between Luck and Rovno, Eastern Poland.

Citellus suslicus ognevi Reshetnik, 1946

1946. *Citellus suslica ognevi* Reshetnik, Bull. Soc. Nat. Moscow, Sect. Biol. N.S. *51*, 6: 27. Environs of Kishinev, Rumanian Bessarabia.

Citellus pygmaeus Pallas, 1779 Little Souslik

Approximate distribution of species: southern part of Ukraine, east of Dnieper, Crimea (except mountains), nearly the whole lower Don area, part of steppe of North-Eastern Caucasus, Kalmuikiya, Lower Volga, and nearly all Kazakstan. Eastwards to Zungaria.

There are very many named subspecies in this species, several of which, I should say, are of doubtful value. I follow Kuznetzov as far as possible in this list.

Citellus pygmaeus pygmaeus Pallas, 1779

1779. *Mus citellus* var. *pygmaea* Pallas, Nov. Sp. Quad. Glir. Ord. 122. Between Emba and Ural Rivers (north-east of Caspian Sea).

(?) 1779. *Mus citellus* var. *flavescens* Pallas, Nov. Sp. Quad. Glir. Ord. 127. Locality unknown. Status not sure, but probably based on a form of this species.

Citellus pygmaeus mugosaricus Lichtenstein, 1823

1823. *Arctomys mugosaricus* Lichtenstein, Eversmann Reise, 119. Mugodshary Mountains, Kirghizia. Range: Aktubinsk and Karaganda steppes.

Citellus pygmaeus musicus Ménétries, 1832

1832. *Spermophilus musicus* Ménétries, Cat. Rais. 21. Foot of Elbruz Mountain, Caucasus.

Citellus pygmaeus brevicauda Brandt, 1843

1843. *Spermophilus brevicauda* Brandt, Bull. Acad. Sci. St. Pétersb. *1:* 364. Zaisan basin (Kuznetzov), Eastern Kazakstan.

1844. *Spermophilus intermedius* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 378. Lake Balkash.

CITELLUS PYGMAEUS PLANICOLA Satunin, 1908

1908. *Citellus musicus planicola* Satunin, Mitt. Kauk. Mus. *4:* 132. Karanogai steppes, Kizljar, Caucasus.

CITELLUS PYGMAEUS CARRUTHERSI Thomas, 1912

1912. *Citellus carruthersi* Thomas, Ann. Mag. N.H. *9:* 393. South side Barlik Mountains, North-Western Zungaria (Northern Chinese Turkestan).

CITELLUS PYGMAEUS HERBICOLA Martino, 1916

1916. *Citellus mugosaricus herbicola* Martino, Ann. Mus. Zool. Petrograd, *21:* 278. Aktyabinsk steppes, Northern Kirghizia, Russian Asia.

CITELLUS PYGMAEUS BRAUNERI Martino, 1917

1917. *Citellus (Colobotis) musicus brauneri* Martino, Bull. Soc. Nat. Crim. vii, 3 (reprint). Igren district, Ecaterinoslav Govt., Crimea. Range: Crimea, Ukraine east of Dnieper.

CITELLUS PYGMAEUS SATUNINI Sviridenko, 1922

1922. *Citellus satunini* Sviridenko, Bull. Mus. Georgie, *1:* 69. Daghestan, 2,000 ft. (environs of Temir Khan Sura, about 42°50′ N., 47° E.), Caucasus.

CITELLUS PYGMAEUS SEPTENTRIONALIS Obolensky, 1927

1927. *Citellus pygmaeus septentrionalis* Obolensky, C.R. Acad. Sci. Leningrad, 190. Ferapontovka, Samara (Buzuluk steppes), Russia.

(?) 1927. *Citellus pygmaeus* var. *atricapilla* Orlov, Materials Contrib. det. Fauna L. Volga, *1:* 92. Village Diakovka, Krasnokutsk district on River Eruslan, adjoining the Volga, Russia. Not of Bryant, 1889.

1940. (*Citellus*) *binominatus* Ellerman, Fam. Gen. Liv. Rodents, *1:* 442 (footnote). To replace *atricapilla* Orlov, preoccupied.

CITELLUS PYGMAEUS BOEHMI Krassovski, 1932

1932. *Citellus pygmaeus bochmii* Krassovski, Bull. Inst. Sci. Res. Ingush, *4,* 1: 107–123. Neighbourhood of Nishnie Ataluki, Ingushetiya, Caucasus. "Very close to *musicus*, an extremely doubtful form" (Kuznetzov).

CITELLUS PYGMAEUS NIKOLSKII Heptner, 1934

1934. *Citellus pygmaeus nikolskii* Heptner, Folia Zool. Hydrob. *6:* 20. Forty kilometres north-east of Stadt Aralskoje More, north-east of Aral Sea, Kirghizia.

1935. *Citellus pygmaeus kazakstanicus* Goodwin, Amer. Mus. Nov. 769, 5. Tuz Bulak, 150 miles north of Kizilorda, Perovsk, Kazakstan.

CITELLUS PYGMAEUS KALABUCHOVI Ognev, 1937

1937. *Citellus pygmaeus kalabuchovi* Ognev, M.A. Menzbier Memorial Vol. 322, 335. Valley of River Sal, Zaratchinsky district (Zavetnuii district, according to Kuznetzov), Northern Caucasus.

CITELLUS PYGMAEUS ELLERMANI Harris, 1944

1944. *Citellus pygmaeus ellermani* Harris, Occ. Pap. Mus. Zool. Univ. Mich. 484, 7. Ulan Khol, Kalmouk steppes, near Astrakhan, Southern Russia.

1927. *Citellus pygmaeus pallidus* Orlov & Feniuk, Mat. Contr. Faun. Lower Volga, *1:* 63. Not *Citellus pallidus* Allen, 1877, from North America.

1940. *Citellus pygmaeus orlovi* Ellerman, Fam. Gen. Liv. Rodents, *1:* 444, to replace *pallidus* Orlov & Feniuk, preoccupied. Not *Citellus orlovi* Ognev, 1937.

Citellus pygmaeus arenicola Rall, 1935, Rev. Microbiol. Epidemiol. Parasitol. Saratov, *14,* 1, (Volzhsko-Urals), (*N.V.*, reference from Heptner), is preoccupied (not of Howell, 1928), and is renamed *Citellus pygmaeus ralli* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 710.

Citellus major Pallas, 1779 Red-cheeked Souslik

Approximate distribution of species, as here understood: Transvolgan Russia, from Volsk north to River Kama; Urals to Altai in Siberia; Eastern Russian Turkestan (*relictus*).

CITELLUS MAJOR MAJOR Pallas, 1779

1779. *Mus citellus* var. *major* Pallas, Nov. Sp. Quad. Glir. Ord. 125, and Tab. VI, opposite p. 122. Grassy plains around Samara, Russia.

1840. *Spermophilus rufescens* Keyserling & Blasius, Wirbelth. Europas, 42. Ural Mountains, Russia.

Range: Transvolga, Southern Urals, Transuralia, as far east as Ischim River, Siberia.

CITELLUS MAJOR ERYTHROGENYS Brandt, 1841

1841. *Spermophilus erythrogenys* Brandt, Bull. Acad. Sci. St. Pétersb. 43. Foothills of Altai Mountains, Siberia. Range: Altai steppes as far west as Irtish River, north to Omsk-Novosibirsk line, east to Kuzbass, south to Altai foothills (Kuznetzov).

CITELLUS MAJOR UNGAE Martino, 1923

1923. *Citellus erythrogenys ungae* Martino, Ann. Mus. Zool. Petrograd, *24:* 23. Near Omsk, Siberia. Range: steppes between Rivers Irtish and Ischim, Siberia.

CITELLUS (?) MAJOR RELICTUS Kashkarov, 1923

1923. *Citellus musicus relictus* Kashkarov, Trans. Soc. Sci. Turkestan, 185. Karabura Pass, Western Kirgisistan, Tianshan Mountains, approximately 42° N., 71° E. Range: Tian Shan Mountains, and west of Hissar Range, Russian Turkestan.

I am not well acquainted with this form, which is regarded as a species by Russian authors, but which apparently could well represent *C. major*.

CITELLUS MAJOR SELEVINI Vinogradov & Argyropulo, 1941

1941. *Citellus erythrogenys selevini* Vinogradov & Argyropulo, Tab. Anal. Rong. Faune U.S.S.R. n.s. *29:* 108. Dar, between Karagand and Lake Balkash.

Citellus pallidicauda Satunin, 1903

Approximate distribution of species: Mongolia.

Citellus pallidicauda Satunin, 1903

1903. *Spermophilus pallidicauda* Satunin, Ann. Mus. Zool. St. Pétersb. *7:* 551. Chulmu Nor, Ullyn Bulyk, River Baidarak, Gobi Altai, Mongolia.

Citellus undulatus Pallas, 1779 Longtailed Siberian Souslik

Approximate distribution of species: Russian Tianshan and Altai, most of Eastern Siberia to Anadyr region, Kamtchatka and Amur; Chinese Tianshan, Mongolia. Possibly also in North America.

Citellus undulatus undulatus Pallas, 1779

1779. (*Mus citellus*) var. *undulatum* Pallas, Nov. Sp. Quad. Glir. Ord. 127. River Selenga (Lake Baikal), Eastern Siberia.

1927. *Citellus eversmanni transbaicalicus* Obolensky, C.R. Acad. Sci. Leningrad, 192. Lake Ivan, Transbaikalia.

Range: area around Lake Baikal, Western Transbaikalia.

Citellus undulatus eversmanni Brandt, 1841

1841. *Spermophilus eversmanni* Brandt, Bull. Acad. Sci. St. Pétersb. 43. Altai Mountains.

1841. *Arctomys altaicus* Eversmann, Add. Zoog. R. Asiat. *2:* 1.

Range: Altai and Sayan Mountains, Siberia.

Citellus undulatus jacutensis Brandt, 1844

1844. *Spermophilus jacutensis* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 378. Yakutsk district, Eastern Siberia.

Citellus undulatus leucostictus Brandt, 1844

1844. *Spermophilus leucostictus* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 379. Okhotsk River, North-Eastern Siberia.

1903. *Citellus buxtoni* J. Allen, Bull. Amer. Mus. N.H. *19:* 139. Gichiga, west coast Okhotsk Sea, Eastern Siberia.

Range: northwards to Rivers Kolyma and Anadyr.

Citellus undulatus stejnegeri J. Allen, 1903

1903. *Citellus stejnegeri* J. Allen, Bull. Amer. Mus. N.H. *19:* 142. Near Petropavlovsk, Kamtchatka.

Citellus undulatus stramineus Obolensky, 1927

1927. *Citellus eversmanni stramineus* Obolensky, C.R. Acad. Sci. Leningrad, 192. Near Leman Gegen, North-Western Mongolia. Range: Mongolia, Zungaria, Tianshan Mountains. (G. Allen made this a synonym of *jacutensis*, but Kuznetzov says it is a valid race, and gives characters.)

CITELLUS UNDULATUS INTERCEDENS Ognev, 1937

1937. *Citellus (Urocitellus) eversmanni intercedens* Ognev, M.A. Menzbier Memorial Vol. 327, 336. Svetensk, Nerchinsk district, Eastern Transbaikalia.

CITELLUS UNDULATUS MENZBIERI Ognev, 1937

1937. *Citellus (Urocitellus) eversmanni menzbieri* Ognev, M. A. Menzbier Memorial Vol. 330, 336. Twenty-three kilometres from Blagoveschensk (near Ignatijevka), Upper Amur, Eastern Siberia.

CITELLUS UNDULATUS JANENSIS Ognev, 1937

1937. *Citellus (Urocitellus) eversmanni janensis* Ognev, M. A. Menzbier Memorial Vol. 332, 337. Konjurjakh, upper course of River Jana, Verhoiansk district, Siberia.

Citellus fulvus Lichtenstein, 1823 Large-toothed Souslik

Approximate distribution of species: South-Eastern Transvolgan Russia, north to Volsk region, Russian Turkestan, where it is widely distributed, Northern Persia, Northern Afghanistan, east into Chinese Turkestan (Kashgar, specimen in British Museum). Only three of the named forms are represented in London.)

CITELLUS FULVUS FULVUS Lichtenstein, 1823

1823. *Arctomys fulvus* Lichtenstein, Eversmann Reise, 119. River Kuwandzaliur, east of Mugodshary Mountains, north of Sea of Aral, Kirghizia.
1829. *Arctomys concolor* Fischer, Synops. Mamm. 346.
1829. *Arctomys concolor* var. *giganteus* Fischer, Synops. Mamm. 347.
1829. *Arctomys concolor* var. *nanus* Fischer. Synops. Mamm. 347.
1831. *Spermophilus concolor* I. Geoffroy, in Bélanger, Voy. Indes Orient. 151. Sultenia, near Kazvin, North-Western Persia.
1915. *Citellus fulvus parthianus* Thomas, Ann. Mag. N.H. *15:* 423. Meshed, North-Eastern Persia. There is no evidence in British Museum material that this form can be separated from the typical race.

Range: Aktubinsk, Turgai and Aral steppes, Russian Turkestan; Kashgar; Persia (part).

CITELLUS FULVUS HYPOLEUCOS Satunin, 1909

1909. *Cynomys concolor hypoleucos* Satunin, Ann. Mus. Zool. St. Petersb. *14:* 1. Kutschan, Northern Persia.

CITELLUS FULVUS OXIANUS Thomas, 1915

1915. *Citellus fulvus oxianus* Thomas, Ann. Mag. N.H. *15:* 422. Fifty miles south-west of Bokhara, Russian Turkestan. (A form of doubtful validity, probably = the typical race.)

CITELLUS FULVUS ORLOVI Ognev, 1937

1937. *Citellus (Colobotis) fulvus orlovi* Ognev, M. A. Menzbier Memorial Vol. 318, 334. Near Volsk, Lower Volga, Russia.

CITELLUS FULVUS NIGRIMONTANUS Antipin, 1942

1942. *Citellus fulvus nigrimontanus* Antipin, C.R. Acad. Sci. Moscow, *36:* 29. Karatau Range (eastern slope of Muinshelke), Kazakstan.

Genus **MARMOTA** Blumenbach, 1779

1775. *Marmota* Frisch, Natur-System der vierfüss. Thiere, 9 (see page 2).
1779. *Marmota* Blumenbach, Handb. Naturgesch. *1:* 79. *Mus marmota* Linnaeus.
1780. *Arctomys* Schreber, Säugeth., pls. 207–211, text *4:* 721–743. *Arctomys marmota* = *Mus marmota* Linnaeus.
1780. *Lagomys* Storr, Prodr. Meth. Mamm. 39. Renaming of *Arctomys*.
1811. *Lipura* Illiger, Prodr. Syst. Mamm. et Avium, 95. (*hudsonius* = *Mus monax* Linnaeus, from North America).
1922. *Marmotops* Pocock, P.Z.S. 1200. *Mus monax* Linnaeus.

3 species in the area covered by this list:
Marmota bobak, page 514 *Marmota marmota*, page 513
Marmota caudata, page 515

A very fair number of skulls for this genus representing nearly all the named forms from Europe and Asia are available and have been measured, and while they stand widely apart from all other Palaearctic and Indian Sciuridae on account of their unusually large size, powerful ridges and flattened braincase, combined with long palate and long orbit, they do not differ among themselves at all so far as ascertained. I have therefore come to the conclusion that far too many species are currently recognized in this genus, and although the present treatment is somewhat revolutionary, it seems probable that there are only three widely ranging species of this genus in the Palaearctic region: namely, *caudata*, characterized by its rather long tail; *bobak*, characterized by short tail and short fur; and *marmota*, like the last, but fur normally thicker and longer. Even the last two tend to grade into each other in our material.

Marmota marmota Linnaeus, 1758 Alpine Marmot

Approximate distribution of species, as here understood: French Alps, Switzerland, Northern Italy, Carpathian Mountains, northwards into Poland, Germany; Siberian Altai region, Tianshan Mountains, Eastern Russian Turkestan, Zungaria; Kamtchatka, region of Lake Baikal and Verhoiansk Mountains, in Eastern Siberia, north-eastwards to Anadyr region. Also probably in North America.

MARMOTA MARMOTA MARMOTA Linnaeus, 1758

1758. *Mus marmota* Linnaeus, Syst. Nat. 10th ed. *1:* 60. Alps.
1779. *Marmota alpina* Blumenbach, Handb. Nat. *1:* 80. Substitute for *marmota*.
1801. *Arctomys marmota tigrina* Bechstein, Gemeinn Nat. 2nd ed. *1:* 1029.
1801. *Arctomys marmota alba* Bechstein, *loc. cit.* 1030.
1801. *Arctomys marmota nigra* Bechstein, *loc. cit.* 1030.
1904. *Marmota marmotta* Trouessart, Cat. Mamm. Viv. Foss. Suppl. 343.

Range: Swiss, French and Italian Alps; Austria, into Germany (according to Pohle, 1941), Carpathians; Tatra Mountains, Czechoslovakia.

MARMOTA MARMOTA CAMTSCHATICA Pallas, 1811

1811. *Arctomys baibak* var. *camtschatica* Pallas, Zoogr. Ross. Asiat. 156. Kamtchatka.

MARMOTA MARMOTA BAIBACINA Brandt, 1843

1843. *Arctomys baibacina* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 364. Altai Mountains (Kuznetzov says type came from near Cherga, Altai).

1909. *Arctomys centralis* Thomas, Ann. Mag. N.H. *3:* 260. Mt. Boro-Choro, Aksai Plateau, 120 miles north of Kashgar, Turkestan.

Range: mountains and foothills of Altai, Tarbagatai and Eastern Tianshan, as far west as Aksu gorge in Kirghiz Alatau, Dzhumgal, Naruin district, and Arpa (Kuznetzov); Zungaria.

MARMOTA MARMOTA BUNGEI Kastschenko, 1901

1901. *Arctomys bungei* Kastschenko, Ann. Mus. St. Petersb. *6:* 615. River Omoloy, Verhoiansk Mountains, Eastern Siberia.

1902. *Arctomys cliftoni* Thomas, Ann. Mag. N.H. *9:* 444. Verhoiansk Mountains.

1922. *Marmota doppelmayri* Birula, Ann. Mus. Zool. Acad. Sci. Petrograd, *22*, 4: 80 pages. Upper reaches of River Nergili, east shore of Lake Baikal, 50 km. northwards from Sviatoi Nos, Eastern Siberia.

Range: mountains of Baikal range, Bargusin region, Eastern and Southern Yakutia, Eastern Siberia.

MARMOTA (?) MARMOTA MENZBIERI Kashkarov, 1925

1925. *Arctomys menzbieri* Kashkarov, Trans. Sci. Soc. Turkestan, *2:* 47. Western Tianshan, boundary of Chifir Tash and Upper Ugama River. Range: Western Tianshan. Not represented in British Museum, but from description should belong with the present series of races.

Marmota bobak Muller, 1776 Bobak Marmot (Himalayan Marmot)

Approximate range of species: Poland, and possibly Northern Rumania (Bukovina). Russia, from Ukraine, Don, Mid and Lower Volga, Transvolga, Southern Urals, east to Transuralia and Northern and Eastern Kazakstan. Altai steppe (Chuiskaya steppe) and Southern Transbaikalia. Manchuria, Mongolia; Tibet, Western China (states of Kansu, Szechuan, Yunnan); Northern India, from Kashmir, Northern Punjab and Nepal to Sikkim.

MARMOTA BOBAK BOBAK Muller, 1776

1776. *Mus bobak* Muller, Natursyst. Suppl. Regist. Band, 40. Poland.

1779. *Mus arctomys* Pallas, Nov. Sp. Quad. Glir. Ord. 75. Poland.

1780. *Arctomys bobac* Schreber, Säugeth. pl. cclx. Renaming of *bobak*.

1811. *Arctomys baibac* Pallas, Zoogr. Rosso-Asiat. 155.

Range: Poland, steppes of European Russia, except those along the Ural.

MARMOTA BOBAK HIMALAYANA Hodgson, 1841

1841. *Arctomys himalayanus* Hodgson, J. Asiat. Soc. Bengal, *10:* 777. Nepal.
1843. *Arctomys hemachalanus* Hodgson, J. Asiat. Soc. Bengal, *12:* 410. Nepal.
1847. *Arctomys tibetanus* Gray, Cat. Hodgsons Coll. B.M. 24.
1847. *Arctomys tataricus* Jameson, L'Institut, *15:* 384.
1872. *Arctomys robustus* Milne-Edwards, Nouv. Arch. Mus. Bull. 7: 92. Moupin, Szechuan, China.
1879. *Arctomys hodgsoni* Blanford, Yarkand Miss. Mamm. 35. Nepal.

Range: Sikkim, Nepal, Lahul, Ladak, Baltistan, in Himalayan India; Tibet, Yunnan, Szechuan and Kansu, China.

MARMOTA BOBAK SIBIRICA Radde, 1862

1862. *Arctomys bobac sibirica* Radde, Reise. Sud. Ost. Sibir. 159. Transbaikalia, perhaps region between Tarei Nor and Lake Baikal (G. Allen, 1940).
1922. *Arctomys dahurica* Dybowski, Arch. Tow. Nauk. Lwow, *3:* 8, *nom. nud.* (*N.V.*)

Range: Mongolia, Manchuria, Chuiskaya steppe in Siberian Altai, and Southern Transbaikalia.

MARMOTA BOBAK TSCHAGANENSIS Bazhanov, 1930

1930. *Marmota bobak tschaganensis* Bazhanov, Byull. Srednevolskoi Kraevoi Stantsii Zasch. Rast. 1926–1928, Samara, 1930: 63 (reprint only seen). (Bull. Central Volga Region Plant Prot. St. Samara.) Spelt *schaganensis*, p. 63, corrected p. 67. Miroshkino, on Chagan River, tributary of the Ural. Range: steppes along River Ural, Southern Urals, Transuralia, Northern Kazakstan. (According to Vinogradov, Akmolinsk is about the eastern limit of *bobak*, as understood by Russian authors, in Kazakstan.)

Marmota caudata Jacquemont, 1844 Longtailed Marmot

Approximate distribution of species: Southern and Eastern Russian Turkestan, Afghanistan, northern parts of Indian North-West Frontier, Kashmir, to Chinese Turkestan and possibly Western Mongolia.

MARMOTA CAUDATA CAUDATA Jacquemont, 1844

1844. *Arctomys caudatus* Jacquemont, Voy. dans L'Inde, *4*, Zool. 66. Kashmir. Range: Kashmir only. *M. caudata* of most Russian authors is apparently the next, which is quite distinct in colour in London material.

MARMOTA CAUDATA AUREA Blanford, 1875

1875. *Arctomys aureus* Blanford, J. Asiat. Soc. Bengal, *44:* 106, 123. Kaskasu Pass, mountains west of Yarkand, Chinese Turkestan.
1909. *Arctomys littledalei* Thomas, Ann. Mag. N.H. *3:* 259. Alai Mountains, Pamir.
1909. *Arctomys littledalei flavinus* Thomas, Ann. Mag. N.H. *3:* 259. Hissar Mountains, 100 miles east of Samarkand, Russian Turkestan.
1916. *Marmota stirlingi* Thomas, J. Bombay N.H. Soc. *24*, 2: 341. Head of Chitral Nullah, Chitral, 11,000 ft., North-West Frontier, India.

Range: as in the species, except Afghanistan and Kashmir; in Turkestan, west to Turkestan and Talass Ranges, inclusive.

MARMOTA CAUDATA DICHROUS Anderson, 1875

1875. *Arctomys dichrous* Anderson, Ann. Mag. N.H. *16:* 283. Hills north of Kabul, Afghanistan.

FAMILY CASTORIDAE

Genus: *Castor*, page 516

Genus **CASTOR** Linnaeus, 1758

1758. *Castor* Linnaeus, Syst. Nat. 10th ed. *1:* 58. *Castor fiber* Linnaeus.
1806. *Fiber* Duméril, Zool. Analytique, 18 (diagnosis, 19). Substitute for *Castor*; not of Cuvier, 1800.

1 species in Eurasia:

Castor fiber, page 516

Castor fiber Linnaeus, 1758 European Beaver

Approximate distribution of species (where not exterminated): Scandinavia (in part), including several places in Norway; France (River Rhone), Germany (River Elbe), Poland; River Danube. Russia (part), White Russia, Northern Ukraine, Smolensk, Voronej and Tambov Provinces, and Northern Transuralia (Kuznetzov; this author also quotes from Upper Yenesei, in Siberia, where perhaps extinct?); Northern Mongolia.

CASTOR FIBER FIBER Linnaeus, 1758

1758. *Castor fiber* Linnaeus, Syst. Nat. 10th ed. *1:* 58. Sweden.
1792. *Castor fiber albus* Kerr, Anim. Kingd. 222. Norway and Canada.
1792. *Castor fiber solitarius* Kerr, Anim. Kingd. 224. Black Sea.
1801. *Castor fiber variegatus* Bechstein, Gemeinn Nat. Deutschlands, 2nd ed. *1:* 913. Europe.
1801. *Castor fiber fulvus* Bechstein, *loc. cit.* Europe.
1822. *Castor niger* Desmarest, Mammalogie, *2:* 278. No exact locality.
1822. *Castor varius* Desmarest, *loc. cit.* Northern and Central Europe.
1822. *Castor flavus* Desmarest, *loc. cit.* No exact locality.
1829. *Castor fiber gallicus* Fischer, Synops. Mamm. 287.
1833. *Castor proprius* Billberg, Linn. Samf. Handl. 34 (footnote). Substitute for *fiber*.
1907. *Castor albicus* Matschie, S.B. Ges. Nat. Fr. Berlin, 216. Dessau, Anhalt, Germany.
? 1907. *Castor balticus* Matschie, S.B. Ges. Nat. Fr. Berlin, 217. Pomerania.
? 1907. *Castor vistulanus* Matschie, S.B. Ges. Nat. Fr. Berlin, 219. River Vistula, Poland.
1912. "1803. *Castor galliae* Geoffroy, Catal. Mamm. du Mus. Nat. D'Hist. Nat. Paris, p. 168 (Banks of the Rhone, France)," Miller, Cat. Mamm. West. Europe, 947 (in synonymy). Not valid, as according to Sherborn this name was never published.

CASTOR FIBER POHLEI Serebrennikov, 1929

1929. *Castor fiber pohlei* Serebrennikov, C.R. Acad. Sci. Leningrad, 275. River Leplja, tributary of North Sosva, east slope of Northern Urals, Western Siberia.

CASTOR FIBER BIRULAI Serebrennikov, 1929

1929. *Castor fiber birulai* Serebrennikov, C.R. Acad. Sci. Leningrad, 276. River Bulungun, south of Kobdo, Western Mongolia.

FAMILY HYSTRICIDAE

Genera: *Atherurus*, page 517
Hystrix, page 518

On this family see Ellerman, 1940, *Fam. Gen. Liv. Rodents, 1:* 197, wherein nearly all the known forms are compared; and Lyon, 1907, *Proc. U.S. Nat. Mus. 32:* 575, wherein some of the Malayan Porcupines are compared. Also Lönnberg, 1923, *Ark. Zool. 15*, 19, 1.

Genus **ATHERURUS** Cuvier, 1829

1829. *Atherurus* Cuvier, Dict. Sci. Nat. *59:* 483. *Hystrix macrourus* Linnaeus.
1829. *Atherura* Cuvier, Règne Anim. *1:* 215. Emendation.

1 species in Asia:

Atherurus macrourus, page 517

Atherurus macrourus Linnaeus, 1758 Asiatic Brush-tailed Porcupine

Approximate distribution of species: Sumatra, Malay States and a few small adjacent islands, Indo-China; Hainan, Szechuan in China; Tenasserim, Assam.

ATHERURUS MACROURUS MACROURUS Linnaeus, 1758

1758. *Hystrix macroura* Linnaeus, Syst. Nat. 10th ed. *1:* 57. Malacca (Chasen, 1940).
(?) 1925. *Atherurus stevensi* Thomas, P.Z.S. 505. Ngai-tio, Tonkin, Indo-China.
Range: Malay States, Sumatra (Chasen), north to Tenasserim; and if *stevensi* is the same, Indo-China to Szechuan (G. Allen).

ATHERURUS MACROURUS HAINANUS J. Allen, 1906

1906. *Atherurus hainanus* J. Allen, Bull. Amer. Mus. N.H. *22:* 470. Island of Hainan.

ATHERURUS MACROURUS ASSAMENSIS Thomas, 1921

1921. *Atherurus assamensis* Thomas, J. Bombay N.H. Soc. *27*, 3: 598. Cherrapunji, Khasi Hills, Assam.

Genus **HYSTRIX** Linnaeus, 1758

1758. *Hystrix* Linnaeus, Syst. Nat. 10th ed. *1:* 56. *Hystrix cristata* Linnaeus.
1798. *Histrix* Cuvier, Tabl. Élém. H.N. Anim. 130; modification of *Hystrix*.
1823. *Acanthion* Cuvier, Mém. Mus. H.N. Paris, *9:* 425, 431. *Acanthion javanicum* Cuvier (the Javanese Porcupine). Valid as a subgenus.
1866. *Oedocephalus* Gray, P.Z.S. 308. *Acanthion cuvieri* Gray = *Hystrix cristata* Linnaeus.

4 species in the area covered by this list:

Hystrix brachyura, page 518
Hystrix cristata, page 520
Hystrix hodgsoni, page 519
Hystrix indica, page 519

H. cristata and *H. indica* belong to the subgenus *Hystrix*; the other two species belong to *Acanthion*, which differs in its less specialized external characters chiefly relating to the arrangement and development of spiny covering. The status of *H. brachyura* in the present region is not clear. It is essentially a Malayan species, with short nasals (less than half occipitonasal length, whereas in *hodgsoni* the nasals are clearly more than half this length). The only form in the present region which seems from description to represent *H. brachyura* is *yunnanensis*, a very little known form which is not represented in London. I am not sure of the status of *H. hirsutirostris*, the Russian porcupine, for which we have no authentic material. Müller, in 1911, used this name for many supposed races of porcupine from South-Western Asia, all of which are fairly clearly *H. indica*, the Indian Crested Porcupine (which antedates *hirsutirostris*).

But Kuznetzov (1944, 267) figures the skull of what might be supposed to be an authentic Russian porcupine under the name of *H. hirsutirostris*, which seems to be a specimen of *H. cristata*.

The prior name for the Indian Crested Porcupine, hitherto known as *H. leucura* Sykes, 1831, is *Hystrix indica* (Kerr), 1792, *Anim. Kingd.* 213, based on Smellie's *Buffon*, 1781, *7:* pl. 206.

Subgenus *ACANTHION* Cuvier, 1823

Hystrix brachyura Linnaeus, 1758 — Malayan Porcupine

Approximate distribution of species: Malay States, Borneo, Sumatra. Yunnan?. (Not Java, as listed by Chasen, as I am inclined to regard *H. javanica* (Java-Flores) as a valid species.)

(HYSTRIX BRACHYURA BRACHYURA Linnaeus, 1758. Extralimital)
1758. *Hystrix brachyura* Linnaeus, Syst. Nat. 10th ed. *1:* 57. Malacca.

HYSTRIX (?) BRACHYURA YUNNANENSIS Anderson, 1878
1878. *Hystrix yunnanensis* Anderson, Anat. & Zool. Res. Yunnan, 332. Mountains to east of Kakhyen Hills, extreme Western Yunnan, China.

(From description, this form is allied to *brachyura* or *javanicum*, with short nasals. It is still apparently only known by one specimen, which is not in the British Museum.)

Hystrix hodgsoni Gray, 1847 — Crestless Himalayan Porcupine (Chinese Porcupine)

Approximate distribution of species: Nepal, Assam, Burma, Tenasserim, Siam, Indo-China, Yunnan, South-Eastern China to Fukien and Anhwei, Szechuan to as far north as Southern Shensi, according to G. Allen; Hainan.

HYSTRIX HODGSONI HODGSONI Gray, 1847

1847. *Acanthion hodgsoni* Gray, P.Z.S. 101 (June, 1847). Nepal.
1847. *Hystrix alophus* Hodgson, J. Asiat. Soc. Bengal, *16:* 771 (August, 1847). Himalayas.
(?) 1851. *Hystrix bengalensis* Blyth, J. Asiat. Soc. Bengal, *20:* 170. Bengal.

Range: specimens examined from Nepal, Sikkim, and Naga Hills in Assam (Longpa).

HYSTRIX HODGSONI SUBCRISTATA Swinhoe, 1870

1870. *Hystrix subcristata* Swinhoe, P.Z.S. 638. Foochow, Fukien, South-Eastern China.
1916. *Acanthion klossi* Thomas, Ann. Mag. N.H. *17:* 139. Tenasserim Town, Tenasserim.
1922. *Acanthion millsi* Thomas, J. Bombay N.H. Soc. *28*, 2: 431. Sangrachu, Naga Hills, Assam (based on skulls only).

Range: specimens examined from Siam, Tenasserim, Naga Hills in Assam, Annam, Indo-China, and Southern China (Northern Kiangsi). This race has the Chinese range of the species as listed above, except Hainan.

HYSTRIX HODGSONI PAPAE G. Allen, 1927

1927. *Acanthion subcristatus papae* G. Allen, Amer. Mus. Nov. 290, 3. Nodoa, Island of Hainan. (This form is unrepresented in London.)

Subgenus *HYSTRIX* Linnaeus, 1758

Hystrix indica Kerr, 1792 — Indian Crested Porcupine

Approximate distribution of species: Ceylon, Peninsular India, northwards to Rajputana, Sind, Punjab, Kashmir, Nepal, Baluchistan; Persia, Iraq, Palestine, Syria, Asia Minor, Southern Arabia. Southern and Eastern Russian Turkestan (north to Kara-Kum, Tashkent Oasis, Kirghiz Range and Trans-Ili Alatau), and Transcaucasia if *hirsutirostris* is the same; as noted above, however, possibly the Transcaucasian form represents *H. cristata* (cf. Kuznetzov's figure of skull, 1944, 267).

Having examined many skulls (from all places quoted in India, Persia, Iraq and Southern Arabia), all of which seem to be essentially the same animal, I do not believe this porcupine can be divided into subspecies in a satisfactory manner.

HYSTRIX INDICA INDICA Kerr, 1792

1792. *Hystrix cristata* var. *indica* Kerr, Anim. Kingd. 213. Based on Smellie's *Buffon*, 1781, *7:* pl. 206. India.
1831. *Hystrix leucurus* Sykes, P.Z.S. 103. Deccan, India. (Type skull in B.M. I regret that the type locality listed by me in 1940, 218, was the native name!)
1851. *Hystrix zeylonensis* Blyth, J. Asiat. Soc. Bengal, *20:* 171. Ceylon.

HYSTRIX INDICA INDICA [*contd.*]

1865. *Hystrix malabarica* Sclater, P.Z.S. 353. Cochin, Southern India.

1911. *Hystrix hirsutirostris satunini* Müller, S.B. Ges. Nat. Fr. Berlin, 117. Geok Tepe, east of Caspian Sea, Southern Turkmenia.

1911. *Hystrix hirsutirostris blanfordi* Muller, S.B. Ges. Nat. Fr. Berlin, 121. Jalk, 3,000 m., Baluchistan.

1911. *Hystrix hirsutirostris mersinae* Muller, S.B. Ges. Nat. Fr. Berlin, 122. Mersina, south-east of Taurus, Asia Minor.

1911. *Hystrix hirsutirostris aharonii* Muller, S.B. Ges. Nat. Fr. Berlin, 123. Emmaus, west of Jerusalem, Palestine.

1911. *Hystrix hirsutirostris schmidtzi* Muller, S.B. Ges. Nat. Fr. Berlin, 126. Ain Dcheier, north-west of Dead Sea, Jordan Valley, Palestine. Range: to Aden district, Southern Arabia.

1912. *Hystrix cuniceps* Wroughton, J. Bombay N.H. Soc. *21:* 771. Nokania, Cutch, India.

1919. *Hystrix narynensis* Muller, S.B. Ges. Nat. Fr. Berlin, 67. Region between Lake Issyl Kul and River Naryn, north of Tianshan, Russian Turkestan.

1920. *Hystrix mesopotamica* Müller, Zool. Anz. *51:* 198. Jebel Abdul Azir, 36° 20′ N., 40 20′ E., North-Eastern Syria.

Range: specimens examined from Nepal, Kumaon, Punjab, Kashmir, Baluchistan, United Provinces, Rajputana, Sind, Cutch, Central India, Central Provinces, Nilgiri Hills, Palni Hills, Dharwar, Cochin (in Travancore) and Ceylon; also Southern Arabia, Iraq and Persia. Besides these places, forms named as above from Turkestan, Asia Minor, Palestine and Syria.

HYSTRIX (?) INDICA HIRSUTIROSTRIS Brandt, 1835

1835. *Hystrix hirsutirostris* Brandt, Mamm. Exot. Nov. 39. Talysh, Transcaucasia, is apparently the correct type locality. Possibly a form of *Hystrix cristata*; see remarks above.

Hystrix cristata Linnaeus, 1758 Crested Porcupine

Approximate distribution of species: Italy, Sicily; North Africa, from Morocco, Algeria, Tunis, Libya (Dr. Kamal Wassif, who has recently visited the British Museum, says that a *Hystrix* occurs in Southern Egypt, and G. Allen quotes it from Egypt). Asben, Sahara; Senegal; probably widely distributed in Eastern Tropical Africa, north to Northern Sudan (as probably *H. galeata* Thomas is the same). (But not South Africa, as *H. africaeaustralis* Peters, 1852, seems a valid species.) Differs from *H. indica* in its much longer and wider nasals.

HYSTRIX CRISTATA CRISTATA Linnaeus, 1758

1758. *Hystrix cristata* Linnaeus, Syst. Nat. 10th ed. *1:* 56. Near Rome, Italy.

1792. *Hystrix cristata europaea* Kerr, Anim. Kingd. 213. Renaming of *cristata*.

(?) 1823. *Acanthion daubentoni* Cuvier, Mém. Mus. H.N. Paris, *9:* 131. Locality unknown.

(?) 1839. (*Hystrix cristata*) var. *alba* de Sélys Longchamps, Études de Micromamm. 152, *nom. nud.*

1847. *Acanthion cuvieri* Gray, P.Z.S. 102. North Africa. (See P.Z.S. *1866*, 308.)

(?) 1924. *Hystrix occidanea* Cabrera, Bol. Real Soc. Esp. H.N. *24:* 220. Mogador, Morocco.

FAMILY CTENODACTYLIDAE

Genera: *Ctenodactylus*, page 521
Massoutiera, page 521

These genera differ from each other in dental peculiarities, the cheekteeth being roughly kidney-shaped in *Ctenodactylus* and eight-shaped in *Massoutiera*. The family is North African only, but extends somewhat south of the area covered by this list.

Genus **CTENODACTYLUS** Gray, 1830

1830. *Ctenodactylus* Gray, Spicil. Zool. 10. *Ctenodactylus massonii* Gray.

1 species: *Ctenodactylus gundi*, page 521

Ctenodactylus gundi Rothmann, 1776 Gundi

Approximate distribution of species: Libya, Tunis, Algeria, west to Moroccan Atlas (specimen in British Museum).

Ctenodactylus gundi gundi Rothmann, 1776

1776. *Mus gundi* Rothmann, Schloezer's Briefwechsel, 339. (*N.V.* Sherborne's reference.) Gharian, 80 km. south of Tripoli, Libya.
1830. *Ctenodactylus massonii* Gray, Spicil. Zool. 11, pl. 10. Biskra, Algeria.
1834. *Ctenodactylus typicus* Smith, South Afr. Quart. J. *2:* 151. "Barbary."
1897. *Ctenodactylus arabicus* Trouessart, Cat. Mamm. *1:* 597. (Based on the Gundi Marmot of Shaw, 1801, Gen. Zool. *2:* 123.)

Range: Moroccan Atlas, Algeria, Tunis, Libya (in part).

Ctenodactylus gundi vali Thomas, 1902

1902. *Ctenodactylus vali* Thomas, P.Z.S. *2:* 11. Wadi Bey, north-west of Bonjem, Libya.

Ctenodactylus gundi joleaudi Heim de Balsac, 1936

1936. *Ctenodactylus joleaudi* Heim de Balsac, Suppl. Bull. Biol. de France et de Belgique, Paris, *21:* 315; 378, fig. 10, 7; 381, fig. 12A, 405; see *1937*, Bull. Soc. Zool. de France, *62:* 329. Beni Ounif, Jebel Melias, Algeria.

Genus **MASSOUTIERA** Lataste, 1885

1885. *Massoutiera* Lataste, Le Naturaliste, *3:* 21. *Ctenodactylus mzabi* Lataste.

1 species: *Massoutiera mzabi*, page 521

Massoutiera mzabi Lataste, 1881 Lataste's Gundi

Approximate distribution of species: Algeria, south to Asben, Morocco.

MASSOUTIERA MZABI MZABI Lataste, 1881

1881. *Ctenodactylus mzabi* Lataste, Bull. Soc. Zool. France, *6:* 214. Ghardaia, Mzab, Algeria. Ranges to Morocco.

MASSOUTIERA MZABI HARTERTI Thomas, 1913

1913. *Massoutiera harterti* Thomas, Nov. Zool. *20:* 31. Oued Mya, south of Fort Miribel, Western Algerian Sahara (about 28°30′ N., 3° E.).

MASSOUTIERA MZABI ROTHSCHILDI Thomas & Hinton, 1921

1921. *Massoutiera rôthschildi* Thomas & Hinton, Nov. Zool. *28:* 11. Mt. Baguezan, Asben, Sahara; ranges northwards to Ahaggar district, Algerian Sahara

FAMILY DIPODIDAE

See Vinogradov, 1937, *Inst. Zool. Acad. Sci. L'U.R.S.S.*, Ser. 13, *3*, No. 4, for a monograph of this family (Russian, with English resumé).

Genera: *Alactagulus*, page 533
Allactaga, page 527
Cardiocranius, page 526
Dipus, page 535
Eozapus, page 525
Euchoreutes, page 527
Jaculus, page 538
Paradipus, page 535
Pygeretmus, page 534
Salpingotus, page 526
Sicista, page 522
Stylodipus, page 536

Of these, *Sicista* is usually regarded as forming a monotypic subfamily, as it is the only member of the family not modified for a bipedal saltatorial life (Vinogradov refers it to the Zapodinae); *Eozapus* belongs to the subfamily Zapodinae; *Cardiocranius* and *Salpingotus* to the Cardiocraniinae; *Euchoreutes* is type of the Euchoreutinae, and most authors refer the rest to the subfamily Dipodinae, which Vinogradov divided by regarding *Allactaga*, *Alactagulus* and *Pygeretmus* as a special subfamily Allactaginae.

Subspecies listed here are mainly those recognized by Russian authors. Apart from *Jaculus* and some species of *Allactaga*, British Museum material is not sufficient for racial details to be made clear.

SUBFAMILY Sicistinae

Genus **SICISTA** Gray, 1827

1827. *Sicista* Gray, Griffith's Cuvier Anim. Kingd. *5:* 228. *Mus subtilis* Pallas.
1840. *Sminthus* Nordmann in Demidoff, Voy. Russie, *3:* 49. *Sminthus loriger* Nathusius.

6 species: *Sicista betulina*, page 524
Sicista caucasica, page 525
Sicista caudata, page 525
Sicista concolor, page 524
Sicista napaea, page 524
Sicista subtilis, page 523

These species are recognized by Russian authors. We have no material for *caucasica* or *napaea*. The earliest named species, *subtilis* and *betulina*, differ from the remainder by possessing a black mid-dorsal stripe on the back, and from each other in the length of tail and hindfoot, which are much longer in *betulina* than *subtilis*. Of the stripeless species, the tail is said to be relatively shorter in *napaea* than allies; most of the distinctions between the species seem to be based on the structure of the penis, which is not known in some forms. The type of *caudata* has an unusually long tail, and very small teeth. From its description the type of *caucasica* has an even longer tail proportionately than *caudata*, but normal toothrow length, and also from its description the type of *napaea* has a relatively shortened hindfoot compared with other members of the *concolor* group.

Sicista subtilis Pallas, 1773 Southern Birch Mouse

Approximate distribution of species: Czechoslovakia, Rumania, Bulgaria, Poland, Southern Russia from Ukraine, Crimea, Northern Caucasus foothills (Kiev-Voronej-Kuibuishev line roughly, thence southwards); Kazakstan, eastwards to Altai, Krasnoiar and Irkutsk districts, northwards about to Omsk, Orsk and Novosibirsk, and including Minussinsk, Kuznetz, Baikal steppes, etc., in Siberia (Southern Asiatic limits approximately Lower Emba, Turgai, Karaganda and Ala-Kul).

The subspecies seem hardly differentiated.

Sicista subtilis subtilis Pallas, 1773

1773. *Mus subtilis* Pallas, Reise, *2:* 705. Kuznetzov says this was described from the steppe of the Upper Tobol, in Western Siberia.

1823. *Mus lineatus* Lichtenstein, Eversmanns Reise, 123. Usunburta River.

Range: steppes of Lower Ural, Transuralia and Western Siberia.

Sicista subtilis vaga Pallas, 1779

1779. *Mus vagus* Pallas, Nov. Spec. Quad. Glir. Ord. 327. Semi-desert on the Lower River Ural.

1926. *Sicista nordmanni pallida* Kashkarov, ex Vinogradov, 1926, Rodents of Turkestan, 11, in Usbekistan Exp. Plant. Prot. Djetysu, Russian Turkestan.

Range: Volgo-Ural Steppe and semi-deserts of Northern Kazakstan.

Sicista subtilis nordmanni Keyserling & Blasius, 1840

1840. *Sminthus nordmanni* Keyserling & Blasius, Wirbelth. Europas, 38. Near Odessa, Southern Russia (Kuznetzov).

1840. *Sminthus loriger* Nathusius, Nordmann, Voy. Demidoff, *3:* 49. Odessa.

Range: South-Western Ukraine, westwards into Rumania, Bulgaria.

I follow Ognev in adopting the name *nordmanni*, although Miller (1912) adopted *loriger* and listed *nordmanni* as synonym.

Sicista subtilis trizona Petenyi, 1882

1882. *Mus trizonus* Petenyi, Termeszetrajzi Füzetek, *5:* 103. Hungary. The following alternative names were proposed by Petenyi in the same paper, 103: *Mus interzonus*, *Mus interstriatus*, *Mus tripartitus*, *Mus virgulosus*, *Mus tristriatus*.

Sicista subtilis sibirica Ognev, 1935

1935. *Sicista subtilis sibirica* Ognev, Abstr. Works. Zool. Inst. Moscow, *2:* 54. River Kotanda, central part of Russian Altai. Range: Kuznetz, Minussinsk, Baikal steppes, and steppe parts of Altai.

Sicista subtilis severtzovi Ognev, 1935

1935. *Sicista subtilis severtzovi* Ognev, Abstr. Works. Zool. Inst. Moscow, *2:* 54. Kamennaja Steppe, Voronej Province, Southern Russia. Range: Southern European part of U.S.S.R., except South-Western Ukraine and Southern Transvolga.

Sicista betulina Pallas, 1779 Northern Birch Mouse

Approximate distribution of species: Norway, Sweden, in part (according to Chaworth-Musters), Denmark, North-Eastern Germany, Hungary, Czechoslovakia, Russia (from Northern Ukraine and Northern Caucasus as far north as Archangel and Lower Pechora); forests of Siberia, eastwards to Transbaikalia, Krasnoiarsk, Sayan Mountains, etc. Russian authors recognize no subspecies.

Sicista betulina Pallas, 1779

1779. *Mus betulina* Pallas, Nov. Sp. Quad. Glir. Ord. 90. Banks of River Ischim, Siberia.

1913. *Sicista montana* Méhely, Allattani Kozlem. *12:* 69. Zuberecz, Northern Hungary.

1913. *Sminthus tatricus tatricus* Méhely, Die Streifenmäuse Europe, 236, *nom. nud.* (*N.T.*)

1927. *Sicista norvegica* Chaworth-Musters, Ann. Mag. N.H. *19:* 542. Volde, Surendal (now spelt Surnadal), Nordmore, Norway.

1931. *Sicista montana strandi* Formozov, Folia Zool. Hydrob. Riga, *3:* 79. Igera, 2,100 m., district Utschkulak, Karatschai, Caucasus.

Sicista napaea Hollister, 1912

Approximate distribution of species: mountains and foothills of Russian Altai.

Sicista napaea Hollister, 1912

1912. *Sicista napaea* Hollister, Smiths. Misc. Coll. *60*, 14: 2. Tapucha, Altai Mountains, Siberia.

Sicista concolor Buchner, 1892 Chinese Birch Mouse

Approximate distribution of species, as here understood: Russian Tianshan (and Altai, according to Vinogradov); Chinese Turkestan, Szechuan and Kansu in China; Kashmir.

Sicista concolor concolor Buchner, 1892

1892. *Sminthus concolor* Buchner, Mél. Biol. Acad. St. Pétersb. *13:* 267. 1892, Bull. Acad. Imp. Sci. St. Pétersb. *35:* 107. Guiduisha, northern slope of mountains of Sining, Kansu, China.

1923. *Sicista weigoldi* Jacobi, Abh. Mus. Dresden, *16*, 1: 15. Hsueshan, near Sungpan, Szechuan, China.

Range: Kansu, Szechuan, China.

Sicista concolor leathemi Thomas, 1893

1893. *Sminthus leathemi* Thomas, Ann. Mag. N.H. *11:* 184. Krishnye Valley, Wardwan, Kashmir.

Sicista concolor flavus True, 1894

1894. *Sminthus flavus* True, Proc. U.S. Nat. Mus. *17:* 341. Central Kashmir, 11,000 ft.

Sicista concolor tianschanica Salensky, 1903

1903. *Sminthus tianschanicus* Salensky, Ann. Mus. St. Pétersb. *8:* 17. Valley of River Chapzagai-Gol, Tianshan. Range: Russian and Chinese Tianshan Mountains.

Sicista caudata Thomas, 1907 — Far Eastern Birch Mouse

Approximate distribution of species: Sakhalin and Ussuri region of extreme Eastern Siberia. (Howell (1929) recorded a specimen of *S. concolor* from Manchuria which on geographical grounds is more likely to be this species.)

Sicista caudata Thomas, 1907

1907. *Sicista caudata* Thomas, P.Z.S. 413. Seventeen miles north-west of Korsakoff, Sakhalin Island.

Sicista caucasica Vinogradov, 1925

Approximate distribution of species: northern slopes of western and central parts of main Caucasus Range, South-Eastern Russia.

Sicista caucasica Vinogradov, 1925

1925. *Sicista caucasica* Vinogradov, P.Z.S. 584. Maikop district, Kuban Province, 7,000–9,000 ft., Northern Caucasus.

Subfamily Zapodinae

Genus **EOZAPUS** Preble, 1899

1899. *Eozapus* Preble, North Amer. Fauna, No. 15, 37. *Zapus setchuanus* Pousargues.

1 species: *Eozapus setchuanus*, page 525

This genus is sometimes regarded as a subgenus of the North American *Zapus* Coues, 1876. However, it is widely separated from it geographically, and morphologically it is just as distinct as is *Napaeozapus*, the other Nearctic genus belonging to this subfamily, to which American authors give generic rank.

Eozapus setchuanus Pousargues, 1896 — Szechuan Jumping Mouse

Approximate distribution of species: China, states of Kansu and Szechuan.

EOZAPUS SETCHUANUS SETCHUANUS Pousargues, 1896

1896. *Zapus setchuanus* Pousargues, Bull. Mus. Paris, *2:* 13. Tatsienlu, Western Szechuan, China.

EOZAPUS SETCHUANUS VICINUS Thomas, 1912

1912. *Zapus setchuanus vicinus* Thomas, Ann. Mag. N.H. *10:* 402. Forty-six miles southeast of Taochow, Kansu, China.

SUBFAMILY Cardiocraniinae

The members of this subfamily are excessively rare in museums. The subfamily resembles the Dipodinae in some ways, but has the unfused three central metatarsals of the Sicistinae and Zapodinae.

Genus **CARDIOCRANIUS** Satunin, 1903

1903. *Cardiocranius* Satunin, Ann. Mus. St. Pétersb. *7:* 582. *Cardiocranius paradoxus* Satunin.

1 species: *Cardiocranius paradoxus*, page 526

Cardiocranius paradoxus Satunin, 1903 Satunin's Pygmy Jerboa

Approximate distribution of species: Northern Kansu, Mongolia.

CARDIOCRANIUS PARADOXUS Satunin, 1903

1903. *Cardiocranius paradoxus* Satunin, Ann. Mus. St. Pétersb. *7:* 584. Sharagoldschin, Nan Shan, North-Western Kansu, China.

Genus **SALPINGOTUS** Vinogradov, 1922

1922. *Salpingotus* Vinogradov, Kozlov, "Mongolia & Amdo", 540. *Salpingotus kozlovi* Vinogradov.

3 species: *Salpingotus crassicauda*, page 527
Salpingotus kozlovi, page 526
Salpingotus thomasi, page 527

These three species have been keyed by Vinogradov. None of them is at all well known.

Salpingotus kozlovi Vinogradov, 1922 Kozlov's Pygmy Jerboa

Approximate distribution of species: Gobi, Mongolia. Recorded from Irtish River, Siberia, by Elizaryeva, 1949, *C.R. Acad. Sci. Moscow, 66:* 495.

SALPINGOTUS KOZLOVI Vinogradov, 1922

1922. *Salpingotus kozlovi* Vinogradov, Kozlov, "Mongolia & Amdo", 542. Near the ruins of Khara-khoto, Gobi, Mongolia.

Salpingotus crassicauda Vinogradov, 1924 Thick-tailed Pygmy Jerboa

Approximate distribution of species: Gobi-Altai, Northern Mongolia.

SALPINGOTUS CRASSICAUDA Vinogradov, 1924

1924. *Salpingotus crassicauda* Vinogradov, Zool. Anz. *61:* 150. Near Shara-in-Sumu, Gobi-Altai, about 160 km. south of Russian border, Mongolia.

Salpingotus thomasi Vinogradov, 1928 Thomas's Pygmy Jerboa

Approximate distribution of species: Afghanistan.

SALPINGOTUS THOMASI Vinogradov, 1928

1928. *Salpingotus thomasi* Vinogradov, Ann. Mag. N.H. *1:* 373. Probably from some part of Afghanistan.

SUBFAMILY Euchoreutinae

Genus **EUCHOREUTES** Sclater, 1891

1891. *Euchoreutes* Sclater, P.Z.S. *1890:* 610. *Euchoreutes naso* Sclater.

1 species: *Euchoreutes naso*, page 527

Euchoreutes naso Sclater, 1891 Long-eared Jerboa

Approximate distribution of species: Chinese Turkestan, Inner Mongolia.

EUCHOREUTES NASO NASO Sclater, 1891

1891. *Euchoreutes naso* Sclater, P.Z.S. *1890:* 610, pl. 50. Yarkand, Chinese Turkestan.

EUCHOREUTES NASO ALASCHANICUS Howell, 1928

1928. *Euchoreutes naso alaschanicus* Howell, Proc. Biol. Soc. Washington, *41:* 42. One hundred miles north-west of Ningsia (Kansu), Alashan Desert, Inner Mongolia.

SUBFAMILY Dipodinae

Genus **ALLACTAGA** Cuvier, 1836

1836. *Allactaga* Cuvier, P.Z.S. 141. *Mus jaculus* Pallas = *Dipus sibiricus major* Kerr. (See G. Allen, 1940, Mamm. China & Mongolia, *2:* 1067.)

1838. *Alactaga* Cuvier, Trans. Zool. Soc. London, *2:* 133.

1841. *Scarturus* Gloger, Gemeinn. Nat. *1:* 106. *Dipus tetradactylus* Lichtenstein. Valid as a subgenus.

1841. *Scirtetes* Wagner, Gelehrte Anz. k. bay. Ak. Wiss. München, No. 51, 413. Substitute for *Allactaga*.

1844. *Scirtomys* Brandt, Bull. Phys. Math. Ac. Sci. St. Pétersb. *2:* 220. *Dipus tetradactylus* Lichtenstein.

1937. *Allactodipus* Kolesnikov, Bull. Univ. Asiae Cent. *22:* 255. *Allactodipus bobrinskii* Kolesnikov.

Although from descriptions the latter seems distinct, it is evidently not adopted by Russian authors. There is a note in Kuznetzov, 1944, to the effect that Vinogradov thinks it is closely allied to *A. hotsoni*. There are no specimens in London.

10 species: *Allactaga bobrinskii*, page 531 — *Allactaga major*, page 532
Allactaga bullata, page 531 — *Allactaga severtzovi*, page 531
Allactaga elater, page 529 — *Allactaga sibirica*, page 528
Allactaga euphratica, page 530 — *Allactaga tetradactyla*, page 533
Allactaga hotsoni, page 531 — *Allactaga williamsi*, page 530

These species, with the exception of the recently discovered *bobrinskii*, were keyed by Vinogradov (1937). This author gave *Scarturus* generic rank on account of its having one functionless outer toe instead of two, which is surely of not more than subgeneric value. In Kuznetzov's key, *bobrinskii* is stated to be larger than *elater*, and to differ from all other species in the U.S.S.R. by having the digits of hindfoot covered underneath with a thick brush of long hairs.

Subgenus *ALLACTAGA* Cuvier, 1836

Allactaga sibirica group

Medium-sized Jerboas with upper M 3 very small, scarcely larger than P 4.

Allactaga sibirica Forster, 1778 — Mongolian Five-toed Jerboa

Approximate distribution of species: Russian Turkestan, from Semirechyia west to Caspian Sea and Lower Ural River, south to Northern Kara-Kum region; Altai Steppe; Transbaikalia. Chihli, Kansu and Northern Shansi, in China, also Mongolia; and G. Allen lists a specimen from Korea.

ALLACTAGA SIBIRICA SIBIRICA Forster, 1778

1778. *Verbua sibirica* Forster, K. Svenska Vetensk. Akad. Handl. *39:* 112. Transbaikalia.
1790. *Mus saliens* Shaw, Nat. Misc. *2:* 1. Transbaikalia.
1792. *Dipus sibiricus medius* Kerr, Anim. Kingd. 274. Transbaikalia.
1800. *Dipus alactaga* Olivier, Bull. Soc. Philom, *2*, No. 40, 121.
1817. *Dipus brachyurus* Blainville, Nouv. Dict. *13:* 126. Transbaikalia.
1825. *Dipus halticus* Illiger, in Lichtenstein, Abhandl. Wiss. Berlin, 154. Transbaikalia.
1861. *Dipus jaculus* var. *mongolica* Radde, Mél. Biol. Acad. Sci. St. Pétersb. *3:* 680. Tarei-nor, Northern Gobi, Mongolia.

Range: Transbaikalia, Mongolia, Chihli.

ALLACTAGA SIBIRICA SALTATOR Eversmann, 1848

1848. *Dipus saltator* Eversmann, Bull. Nat. Moscow, 188. Tchuya (Chuiskaya) Steppe, Siberian Altai.
1912. *Allactaga grisescens* Hollister, Smiths. Misc. Coll. *60*, 14: 2. Eight miles south of Kosch Agatch, Chuiskaya Steppe, Siberian Altai.

Range: Siberian and Mongolian Altai.

ALLACTAGA SIBIRICA ANNULATA Milne-Edwards, 1867

1867. *Dipus annulatus* Milne-Edwards, Ann. Sci. Nat. *7:* 376. Inner Mongolia (evidently South-Eastern Gobi, G. Allen).

1911. *Allactaga mongolica longior* Miller, Proc. Biol. Soc. Washington, *24:* 54. Fifteen miles north-east of Chingningchow, Kansu, China.

Range: Shansi, Kansu, Mongolia (in part).

ALLACTAGA SIBIRICA SUSCHKINI Satunin, 1900

1900. *Alactaga suschkini* Satunin, Zool. Anz. *23:* 139. Desert Ssara Kopa, south of Irgis Turgai, Kirghiz Steppe, Russian Central Asia.

1914. *Allactaga rückbeili* Thomas, Ann. Mag. N.H. *13:* 571. Banks of River Uszek, Djarkent, Semirechyia.

Range: Steppes of Southern Kazakstan.

ALLACTAGA SIBIRICA ALTORUM Ognev, 1946

1946. *Allactaga sibirica altorum* Ognev, C.R. Acad. Sci. U.S.S.R. *52*, 5: 465 (*N.V.*) Semi-Saz, Valley of River Arpa, Central Tianshan Mountains.

Allactaga elater group

Containing small- or medium-sized Jerboas with M 3 moderate in size, clearly larger than P 4. The species *bullata* and *hotsoni* stand apart from the others available for examination on account of their much larger bullae, and probably *bobrinskii* is similar.

Allactaga elater Lichstenstein, 1825 Small Five-toed Jerboa

Approximate distribution of species: Northern Caucasus and Transcaucasia, Russian Turkestan, where it is common (northwards to Kalmuikov, Irgiz and Zaissan-nor, according to Kuznetzov), Zungaria, Eastern Asia Minor, Persia, Afghanistan, Baluchistan.

The races are in some cases dubious. In London there are good series for the typical race and *indica*; they differ in length of upper toothrows (longer in *indica*); *dzungariae* (type skull only in London) seems a valid form (or aberrant specimen). Kuznetzov seems to think that *caucasica* is indistinguishable from the typical race, and admittedly on scanty material I am unable to distinguish *aralychensis* from *indica*.

The form *vinogradovi* is said to be larger than the rest of the Russian races; there are no specimens for this nor for the other named forms in London.

ALLACTAGA ELATER ELATER Lichtenstein, 1825

1825. *Dipus elater* Lichtenstein, Abh. k. Akad. Wiss. Berlin, 155. Eastern Kazakstan is the type locality, according to Kuznetzov.

(?) 1900. *Allactaga elater caucasicus* Nehring, S.B. Ges. Nat. Fr. Berlin, 67–70. Near Baku, Caucasus.

Range: steppes from Ural River to Kazakstan; and Azerbaijan (Caucasus) if *caucasicus* is the same.

ALLACTAGA ELATER INDICA Gray, 1842

1842. *Alactaga indica* Gray, Ann. Mag. N.H. *10:* 262. Simkoh Hills, Afghanistan.
1863. *Allactaga bactriana* Blyth, Cat. Mamm. 110. Substitute for *indica.*
(?) 1901. *Alactaga aralychensis* Satunin, Zool. Anz. *24:* 461. Aralyk, at foot of Mt. Ararat, about 40 km. south of Erivan, Transcaucasia.
1940. *Allactaga elater turkmeni* Goodwin, Amer. Mus. Nov. 1082, 13. Turkmen Plains, about 60 km. east of Astrabad, sea level, Persia.

Range: Armenia, Eastern Asia Minor, Persia, Afghanistan, Baluchistan.

ALLACTAGA ELATER KIZLJARICUS Satunin, 1907

1907. *Alactaga elater kizljaricus* Satunin, Mitt. Kaukas. Mus. *3:* 45. Kizljar district, North-Eastern Caucasus.

ALLACTAGA ELATER DZUNGARIAE Thomas, 1912

1912. *Allactaga elater dzungariae* Thomas, Ann. Mag. N.H. *9:* 406. Gutschen, 4,000 ft., Zungaria, Chinese Central Asia. Kuznetzov says it occurs also in Semirechyia.

ALLACTAGA ELATER STRANDI Heptner, 1934

1934. *Allactaga elater strandi* Heptner, Folia Zool. Hydrob. *6:* 19. Karabata, neighbourhood of Merv, Transcaspia.

ALLACTAGA ELATER VINOGRADOVI Argyropulo, 1940

1940. *Allactaga elater vinogradovi* Argyropulo, Fauna U.S.S.R. Mammals—Key to the Rodents, 138. Burnoye and Rovnoye, Dzhambulskoto region, Kazakstan. Range: foothills of Talass Alatau and Kara-Tau.

Allactaga euphratica Thomas, 1881 Euphrates Jerboa

Approximate distribution of species: Iraq, Transjordania, Syrian Desert, North-Eastern Arabia.

ALLACTAGA EUPHRATICA Thomas, 1881

1881. *Alactaga euphratica* Thomas, Ann. Mag. N.H. *8:* 15. Iraq. Range as above, specimens in B.M.

Allactaga williamsi Thomas, 1897 Williams' Jerboa

Approximate distribution of species: Transcaucasia, Asia Minor and Afghanistan (see Ellerman, 1918, *P.Z.S. 118,* 3: 774).

The species is very close to *euphratica,* possibly merely a further series of larger races of that.

ALLACTAGA WILLIAMSI WILLIAMSI Thomas, 1897

1897. *Allactaga williamsi* Thomas, Ann. Mag. N.H. *20:* 309. Van, Kurdistan, Asia Minor.

Allactaga williamsi laticeps Nehring, 1903

1903. *Allactaga williamsi laticeps* Nehring, S.B. Ges. Nat. Fr. Berlin, 357. Uninhabited steppe near Köktschi-kissik, the first railway station after Eski-Schehir, on line to Konia, North-Western Asia Minor.

Allactaga williamsi schmidti Satunin, 1907

1907. *Alactaga williamsi schmidti* Satunin, Mit. Kauk. Mus. *3:* 252. Kasimabad, Geokcai district, Caucasus.

Allactaga hotsoni Thomas, 1920 Hotson's Five-toed Jerboa

Approximate distribution of species: Persian Baluchistan.

Allactaga hotsoni Thomas, 1920

1920. *Allactaga hotsoni* Thomas, J. Bombay N.H. Soc. *26*, 4: 936. Kant, 20 miles south-west of Sib, 3,950 ft., Persian Baluchistan.

Allactaga bullata G. Allen, 1925

Approximate distribution of species: Mongolia.

Allactaga bullata G. Allen, 1925

1925. *Allactaga bullata* G. Allen, Amer. Mus. Nov. 161, 2. Tsagan-Nor, Mongolia.

Allactaga bobrinskii Kolesnikov, 1937

Approximate distribution of species: Russian Turkestan, about 100 km. north-west of Bokhara.

Allactaga bobrinskii Kolesnikov, 1937

1937. *Allactodipus bobrinskii* Kolesnikov, Bull. Univ. Asiae. Cent. *22:* 255, 260. Kizil-kum Desert (about 100 km. north-west of Bokhara), Russian Turkestan.

Allactaga major group

Containing large or very large Jerboas. Proportions of upper cheekteeth as in *elater* group.

Allactaga severtzovi Vinogradov, 1925 Severtzov's Jerboa

Approximate distribution of species: lowlands of Russian Central Asia, and Southern Kazakstan, as far north as Lake Balkash, the Lower Chu, the Aral Kara-Kum and Southern Ust-Urt (Kuznetzov).

Allactaga severtzovi Vinogradov, 1925

1925. *Allactaga severtzovi* Vinogradov, P.Z.S. 583. Tomar Utkul, district of Kopal, Semirechyia Province, Russian Turkestan.

Allactaga major Kerr, 1792 Great Jerboa (Earth Hare)

Approximate distribution of species: Southern Russia, from Ukraine to Northern Caucasus, north to Tula, Ryazan, Kazan districts; Russian Turkestan, where it is common, east to Semirechyia, and the Altai Steppe.

(According to Kuznetzov (1944) its northern limit runs from Kiev approximately through Chernigov, Bryansk, Kaluga, along the Oka to Gorki, the Volga to Kazan, and the lower Kama, crosses the Belaya and follows that river to the Southern Urals; thence it ascends the east side of the Urals, almost to Sverdlovsk, and crosses Tyumen and Omsk districts to Novosibirsk, where it turns south to Southern Altai. Its southern limit follows coast of Black Sea, northern foothills of Crimean Mountains, coast of Sea of Azov, foot of Caucasus Range, coast of Caspian, crosses Ust-Urt, and runs along south-eastern shore of Sea of Aral, Syr Darya, to Kara-Tau, and northern foothills of Tianshan to Semirechyia. Eastwards to Dzunghar Alatau, Tarbagatai Mountains, and Altai.)

Allactaga major major Kerr, 1792

1792. *Dipus sibiricus major* Kerr, Anim. Kingd. 274. Between Caspian Sea and River Irtish, Russian Central Asia.

1779. *Mus jaculus* Pallas, Nov. Spec. Quad. Glir. Ord. 87. Not *Mus jaculus* of Linnaeus, 1758. Russian authors erroneously call this species *Allactaga jaculus* Pallas. Crimean steppes, Russia.

? 1810. *Dipus aulacotis* Wagner, Abhandl. Akad. Wiss. Munchen, *3:* 211. Arabia, (?) error.

1844. *Alactaga (Scirteta) jaculus* var. *macrotis* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 220. Tatary Desert, Russia.

Range: Russia, part. If this species is really divisible into valid races, perhaps this name should supersede one of the later-described Asiatic ones, and *macrotis* might become available for the South Russian race.

(Wagner's name seems based on this species, but as its alleged locality is obviously erroneous, probably it is not racially identifiable.)

Allactaga major spiculum Lichtenstein, 1825

1825. *Dipus spiculum* Lichtenstein, Abh. Akad. Wiss. Berlin, 154. Barnaul, Western Siberia. Range: to Northern Kazakstan.

1844. *Alactaga (Scirteta) jaculus* var. *brachyotis* Brandt, Bull. Acad. Imp. Sci. St. Pétersb. *2:* 221. Barnaul.

Allactaga major decumana Lichtenstein, 1825

1825. *Dipus decumanus* Lichtenstein, Abh. Akad. Wiss. Berlin, 154. Slatoust, Ural, Russia (55 N.).

1844. *Alactaga (Scirteta) jaculus* var. *macrotis* subvar. *nigricans* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 220. Slatoust, Ural Mountains.

Range: Bashkiria, north of Kuibishev, south of Tatary, but a dubious form according to Kuznetzov.

Allactaga major vexillarius Eversmann, 1840

1840. *Dipus vexillarius* Eversmann, Bull. Nat. Moscow, 42. Described from Ust-Urt (just east of Caspian Sea) according to Kuznetzov (1944).

1844. *Alactaga* (*Scirteta*) *jaculus* var. *macrotis* subvar. *flavescens* Brandt, Bull. Acad. Sci. St. Pétersb. *2:* 220. Ust-Urt Plateau.

1921. *Allactaga saliens chachlovi* Martino, Observations on the harmful rodents of Semipalatinsk, 87 (*N.V.*) (See also Ann. Mus. Zool. Acad. Leningrad, *31:* 209, 1930). Karabulak, Saissan, Russian Asia.

(?) 1922. *Allactaga saliens hochlovi* Martino, Tzv. Syev. Obl. Stants. Zashch. Rast. *3:* 86. Zaissan district.

Range: Western and Southern Kazakstan, Northern Kirghizia.

Allactaga major fuscus Ognev, 1924

1924. *Allactaga jaculus fuscus* Ognev, Rodents N. Caucasus, Rostov-on-Don, 8. Tischlovsk, Kizlyar, Daghestan, Caucasus.

Not identified

Allactaga arundinis F. Cuvier, 1838, Trans. Zool. Soc. London, *2:* 134. "Barbary", North Africa. No form of this genus is known from North-West Africa.

Subgenus *SCARTURUS* Gloger, 1841

Allactaga tetradactyla Lichtenstein, 1823 Four-toed Jerboa

Approximate distribution of species: Egypt (known only from the type locality, and districts of Mariut and Mersa Matruh).

Allactaga tetradactyla Lichtenstein, 1823

1823. *Dipus tetradactylus* Lichtenstein, Verz. Doublet. Mus. Berlin, 2. Near Alexandria, Egypt.

1827. *Dipus brucii* Lesson, Man. Mamm. 253. Based on the Jerboa described by Bruce from Barca.

Genus **ALACTAGULUS** Nehring, 1897

1897. *Alactagulus* Nehring, S.B. Ges. Naturf. Fr. Berlin, 154. *Dipus acontion* Pallas = *Dipus sibiricus pumilio* Kerr.

1 species: *Alactagulus pumilio*, page 533

Alactagulus pumilio Kerr, 1792 Little Earth Hare (cf. Kuznetzov)

Approximate distribution of species: Northern Caucasus, and Lower Volga north about to Volsk. Russian Turkestan, from Kazakstan (as far north as Aktubinsk, Akmolinsk and Tarbagatai Mountains) south to Afghan border; Chinese Turkestan and Inner Mongolia. (Russian localities quoted by Kuznetzov include also lower Rivers Ural and Emba, South-Western Balkash region, north coast of Sea of Aral, Turkmenia, Usbekistan.)

Alactagulus pumilio [*contd.*]

Ognev, 1948, *Mamm. U.S.S.R. 6:* 242, calls this species *Alactagulus pygmaeus* (*Mus jaculus* var. *pygmaea* Pallas, 1779, Nov. Spec. Quad. Glir. Ord. 284 and 388, fig. (skull) 152). This is preoccupied by *Mus citellus* var. *pygmaea* Pallas, 1779, *loc. cit.* 122.

Alactagulus pumilio pumilio Kerr, 1792

1779. *Mus jaculus* var. *pygmaea* Pallas, Nov. Spec. Quad. Glir. Ord. 284 and 388, fig. (skull) 152. Salty regions towards the Caspian Sea, and round the Lower Volga and Ural. Not of Pallas, 1779.
1779. *Mus jaculus* var. *minor* Pallas, Nov. Spec. Quad. Glir. Ord. 296. Thomas (1897) thought this was a descriptive word, and not a scientific name.
1792. *Dipus sibiricus pumilio* Kerr, Anim. Kingd. 275. Between Caspian Sea and River Irtish, Russian Asia.
1811. *Dipus acontion* Pallas, Zoogr. Rosso-Asiat. 182. Kirghiz Steppes.
1817. *Dipus minutus* Blainville, Nouv. Dict. N.H. *13:* 127. Kirghiz Steppes.

Alactagulus pumilio dinniki Satunin, 1920

1920. *Alactagulus acontion dinniki* Satunin, Trav. Mus. Géorgie, Tiflis, *2:* 196. Prikumsk Steppe, Northern Caucasus.

Alactagulus pumilio potanini Vinogradov, 1926

1926. *Alactagulus acontion potanini* Vinogradov, C. R. Acad. Sci. Leningrad, 233. Ulan Muren, about 120 km. south-west of Kukukhoto, North-Eastern Ordos Desert, Mongolia.

Alactagulus pumilio turcomanus Heptner & Somorodov, 1939

1939. *Alactagulus acontion turcomanus* Heptner & Somorodov, Mammalia, *3:* 109. One hundred and twenty kilometres north of Bairam-Ali, Kara-Kum, Russian Turkestan.

Genus **PYGERETMUS** Gloger, 1841

1841. *Pygeretmus* Gloger, Gemeinn. Hand. u. Hilfsbuch d. Nat. *1:* 106. *Dipus platyurus* Lichtenstein.
1844. *Platycercomys* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *2:* 225. *Dipus platyurus* Lichtenstein.
1944. *Pygerethmus* Kuznetzov, in Bobrinskii, Mamm. U.S.S.R., Moscow: 305.

2 species: *Pygeretmus platyurus*, page 534
Pygeretmus shitkovi, page 535

Pygeretmus platyurus Lichtenstein, 1823 Lesser Fat-tailed Jerboa

Approximate distribution of species: North-Western Russian Turkestan (Lower Ural, Emba, Ust-Urt, north and north-east coast Sea of Aral, as far east as Kzuil-Orda, according to Kuznetzov).

Pygeretmus platyurus Lichtenstein, 1823

1823. *Dipus platurus* Lichtenstein, in Eversmanns Reise, 121. Corrected to: *Dipus platyurus* Lichtenstein, 1828, Abh. Akad. Wiss. Berlin *1825:* 155. Kuvan-Daria River, at junction with Aral Sea.

Pygeretmus shitkovi Kuznetzov, 1930 Greater Fat-tailed Jerboa

Approximate distribution of species: North-Eastern Russian Turkestan (Eastern Kazakstan; Ala-Kul Basin, Lake Balkash, Chu-Ili Mountains, Betpakdala Desert, steppes north of Talass Alatau Mountains, according to Kuznetzov).

Pygeretmus shitkovi Kuznetzov, 1930

1930. *Alactagulus shitkovi* Kuznetzov, C.R. Acad. Sci. Leningrad, 623. Region of Rybalnoje, north-west shore of Lake Ala-Kul, Semirechyia.

1944. *Pygerethmus zhitkovi* Kuznetzov, in Bobrinskii, Mamm. U.S.S.R., Moscow: 305.

Genus **PARADIPUS** Vinogradov, 1930

1930. *Paradipus* Vinogradov, Bull Acad. Sci. Leningrad, 333. *Scirtopoda ctenodactyla* Vinogradov.

1 species: *Paradipus ctenodactylus*, page 535

Paradipus ctenodactylus Vinogradov, 1929 Comb-toed Jerboa

Approximate distribution of species: South-Western Russian Turkestan, apparently only from Repetek, Khodzha-Davlet, near Shafrikan, and in Krasnovodsk district.

Paradipus ctenodactylus Vinogradov, 1929

1929. *Scirtopoda ctenodactyla* Vinogradov, C.R. Acad. Sci. Leningrad, 248. Repetek, Turkmenia.

Genus **DIPUS** Zimmermann, 1780

1780. *Dipus* Zimmermann, Geog. Ges. Menschen und Vierf. Thiere, *2:* 354. *Mus sagitta* Pallas.

1910. *Dipodipus* Trouessart, Faune Mamm. Europe, 207. *Mus sagitta* Pallas.

1 species: *Dipus sagitta*, page 535

Dipus sagitta Pallas, 1773 Northern Three-toed Jerboa

Approximate distribution of species: Northern Caucasus; Russian Turkestan, where it is common, apparently, south to Persian border (Bobrinskii's range map), and north to Altai Steppe; Chinese Turkestan and Mongolia, Southern Manchuria (specimen in British Museum), Northern China (Northern Shensi and Chihli).

Dipus sagitta sagitta Pallas, 1773

1773. *Mus sagitta* Pallas, Reise, *2:* 706. Near Yamuishevskaya, Irtish River, Siberia. (According to a note left by Chaworth-Musters, the type locality was Podpusknoi, which is near Yamuishevskaya.) Range: pine woods on Irtish and Cis-Altai Steppes.

Dipus sagitta lagopus Lichtenstein, 1823

1823. *Dipus lagopus* Lichtenstein, in Eversmanns Reise, 121. North-east coast of Sea of Aral. Range: Southern Kazakstan, Semirechyia, south to Turkmenia, Usbekistan (Vinogradov).

DIPUS SAGITTA DEASYI Barrett-Hamilton, 1900

1900. *Dipus deasyi* Barrett-Hamilton, P.Z.S. 196. Nura, Southern Chinese Turkestan.

DIPUS SAGITTA NOGAI Satunin, 1907

1907. *Dipus nogai* Satunin, Tiflis Mitt. Kaukas. Mus. *3:* 34. Prikumskie sands, North-Eastern Caucasus.

DIPUS SAGITTA SOWERBYI Thomas, 1908

1908. *Dipus sowerbyi* Thomas, Ann. Mag. N.H. *2:* 307. Yulinfu, Northern Shensi, 4,000 ft., China.

1920. *Dipus halli* Sowerby, Ann. Mag. N.H. *5:* 279. Chihfeng, Chihli, China.

Range: Northern Shensi, Chihli, Southern Manchuria, Mongolia.

DIPUS SAGITTA INNAE Ognev, 1930

1930. *Dipodipus sagitta innae* Ognev, Zool. Anz. *91:* 207. Near Enotajewsk, Astrakhan Govt., South-Eastern Russia.

1940. *Dipus sagitta innae* natio *kalmikiensis* Kazantseva, Larina & Semenova, Vyestn. Microbiol. Epidemiol. & Parisitol. *19*, 1: 129 (*N.V.*)

Range: Lower Volga, Volgo-Ural Steppes.

DIPUS SAGITTA ZAISSANENSIS Selewin, 1934

1934. *Dipus sagitta zaissanensis* Selewin, Bull. Univ. Tachkent, *19:* 76. Bukon Sands, Zaissan Nor, Russian Asia.

Genus **STYLODIPUS** G. Allen, 1925

1925. *Stylodipus* G. Allen, Amer. Mus. Nov. 161, 4. *Stylodipus andrewsi* Allen.

1844. *Halticus* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *2:* 213. *Dipus halticus* of Brandt, not Illiger = *Dipus telum* Lichtenstein. Not *Halticus* Hahn, 1831.

This genus is called *Scirtopoda* Brandt, 1844, by Russian authors. Thomas, 1908, *Ann. Mag. N.H. 2:* 308, as first reviser, chose as the type *Dipus mauritanicus* Duvernoy, which equals or is very close to *Jaculus orientalis*, Erxleben, 1777, type of the genus *Jaculus*, and called *Scirtopoda gerboa* by G. Allen (1938) (erroneously, since *orientalis* antedates *gerboa*). Vinogradov, 1930, *Bull. Acad. Sci. Leningrad*, 331, in a review of the cranial characters of the Dipodidae, said that *Scirtopoda* is a valid genus, and that having studied Brandt's paper he could see no reason why Thomas chose *mauritanicus* as type, and proposed to regard *Dipus telum* as type of *Scirtopoda*, as had been done by several Russian authors, because Brandt's first species was in fact *Scirtopoda telum* (*Dipus halticus* Brandt *nec* Illiger, with *Dipus telum* in synonymy). In 1940, *Fam. Gen. Liv. Rodents*, *1*, having consulted with Chaworth-Musters, I followed Vinogradov. One suspects that the reason Thomas chose *mauritanicus* as type was because he believed there were only two valid genera of three-toed Jerboas, *Dipus* and *Jaculus*, and he wished to get rid of Brandt's names. It is probable that he was not well acquainted with *S. telum*, which is separable generically from both the last-named. Pocock, in using *Scirtopoda* for the larger Egyptian Jerboa, entirely overlooked the fact that this species (*J. orientalis*) is type of the genus *Jaculus*, and that by choosing

mauritanicus as type of *Scirtopoda*, Thomas had made the latter a pure synonym of *Jaculus*. Technically, at the present day *mauritanicus* stands as type of *Scirtopoda*, and therefore one has two alternatives: to break the rules on common-sense grounds, or adopt *Stylodipus*, the next available name, for what is currently called *Scirtopoda telum*. Vinogradov was entirely right in criticizing Thomas's choice of type, but he was acting against the rules in overriding the first reviser. There are only two species of three-toed Jerboas known from North Africa, for which the correct names appear to be *Jaculus orientalis*, the type and larger species, and *Jaculus jaculus*, the smaller species.

1 species: *Stylodipus telum*, page 537

Stylodipus telum Lichtenstein, 1823 Thick-tailed Three-toed Jerboa

Approximate distribution of species: Crimea, Northern Caucasus, Russian Turkestan, north to Saissan, south to Kara Kum; Zungaria and Mongolia. (Westwards to Aleshkin Sands, left bank Lower Dnieper.)

Stylodipus telum telum Lichtenstein, 1823

1823. *Dipus telum* Lichtenstein, in Eversmanns Reise, 120. Aral Sea region.

1844. *Dipus halticus* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *2:* 214. Not of Illiger, 1825.

1853. *Dipus proximus* Fairmaire, Rev. Mag. Zool. 145. Jamankala, Ural.

Range: Lower River Ural, River Emba, and around Sea of Aral.

Stylodipus telum falzfeini Brauner, 1913

1913. *Scirtopoda telum falz-feini* Brauner, Bull. Soc. Nat. Crimée, *3:* 85. Aleshkin Sands, archipelago at estuary of River Dnieper, Russia.

Stylodipus telum andrewsi G. Allen, 1925

1925. *Stylodipus andrewsi* G. Allen, Amer. Mus. Nov. 161, 4. Ussuk, Mongolia.

Stylodipus telum amankaragai Selewin, 1934

1934. *Scirtopoda telum amankaragai* Selewin, Bull. Univ. Tachkent, *19:* 76. Aman-Karagai, Kustenai area, Northern Kazakstan.

1937. *S(cirtopoda) t(elum) birulae* ("Martino, 1922") Vinogradov, Fauna U.S.S.R. Mamm. *3*, 4: 169. Zaissan region. Either this or a similar form inhabits Zungaria (Barlik Mountains, specimen in B.M.). We have not been able to trace Martino's 1922 reference.

Stylodipus telum karelini Selewin, 1934

1934. *Scirtopoda telum karelini* Selewin, Bull. Univ. Tachkent, *19:* 76. Mountains of Semei-Tau, near Semipalatinsk, Russian Asia. Range: steppes between Semipalatinsk and Lake Balkash.

Stylodipus telum turovi Heptner, 1934

1934. *Scirtopoda telum turovi* Heptner, Folia Zool. Hydrob. *6:* 19. Fedossejewka, near Turgovaya, Don Steppe, South-Eastern Russia. Range: Volga-Don Steppes, Eastern Ciscaucasia.

Genus **JACULUS** Erxleben, 1777

1777. *Jaculus* Erxleben, Syst. Regn. Anim. 404. *Jaculus orientalis* Erxleben.
1844. *Scirtopoda* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *2:* 212 Type selected by Thomas in 1908 as *Dipus mauritanicus* Duvernoy.
1844. *Haltomys* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *2:* 215. *Dipus mauritanicus* Duvernoy. (Selected by Thomas, 1908.)
1930. *Eremodipus* Vinogradov, Bull. Acad. Sci. Leningrad, 334. *Scirtopoda lichtensteini* Vinogradov. Valid as a subgenus.

4 species: *Jaculus blanfordi*, page 540 *Jaculus lichtensteini*, page 538
Jaculus jaculus, page 539 *Jaculus orientalis*, page 540

Subgenus *EREMODIPUS* Vinogradov, 1930

Ognev, 1948, *Mamm. U.S.S.R. 6:* 362, treats *Eremodipus* as a subgenus of *Jaculus*. I have not seen *Eremodipus* and have therefore hesitated to refer it to *Jaculus*. I follow the classification of Ognev because of a longstanding conviction that there is less difference between *Eremodipus* and *Jaculus* than between the other genera recognized in this family.

Jaculus lichtensteini Vinogradov, 1927 Lichtenstein's Jerboa

Approximate distribution of species: Russian Turkmenia (Kizil-Kum and Aral Kara-Kum).

Jaculus lichtensteini Vinogradov, 1927

1927. *Scirtopoda lichtensteini* Vinogradov, Z. Säuget. *2:* 92. Vicinity of Merv, Turkmenia.

Subgenus *JACULUS* Erxleben, 1777

In British Museum material the three species of *Jaculus* (*sensu stricto*) may be distinguished as below:

1. Smaller; occipitonasal length of skull not exceeding 33.7 mm.; hindfoot normally 64 mm. and less. (Over 80 specimens examined.) *Jaculus jaculus*
   Larger; occipitonasal length of skull approximates 34 mm. at least; hindfoot 68 mm. and more. ——2

2. Interparietal narrower; hindfoot about 68 mm.; occipitonasal length approximately 34–34.2 mm.; frontals proportionately narrower, bullae proportionately larger. *Jaculus blanfordi*
   Interparietal wider; hindfoot exceeds 70 mm.; occipitonasal length approximately 35–38.7 mm.; frontals average proportionately wider, bullae proportionately smaller. *Jaculus orientalis*

(Possibly the large Palestine race, *Jaculus jaculus schlüteri*, may be an exception to the above diagnosis in the length of the hindfoot, but its skull, so far as ascertainable, is *J. jaculus* size.)

Jaculus jaculus Linnaeus, 1758 Lesser Egyptian Jerboa

Approximate distribution of species: Iraq, Arabia, Palestine, Syria, Egypt, Libya, Tunis, Algeria, southwards through the Sahara to Asben, Mauretania, Sudan and Somaliland. Range includes Morocco.

Jaculus jaculus jaculus Linnaeus, 1758

1758. *Mus jaculus* Linnaeus, Syst. Nat. 10th ed. *1:* 63. Giza Pyramids, Egypt; "In Arabia, Calmukia" (G. Allen, 1939).

(?) 1823. *Dipus hirtipes* Lichtenstein, Verz. Doubl. Mus. Berlin, 5. "E deserto prope Sakharum."

1827. *Dipus aegyptius* Lichtenstein, Darstellung neue Säugeth., pl. 22 and text. Egypt.

1828. *Dipus macromystax* Lichtenstein, Abh. Akad. Wiss. Berlin, *1825:* 154 (*nom. nud.* ex Hemprich & Ehrenberg). Based on *Dipus hirtipes*, and said to have come from upper reaches of Nile, from Syene (Assuan) to Dongola.

(?) 1840. *Dipus macrotarsus* Wagner, Abh. Akad. Wiss. München, *3:* 214. Arabia.

Range: Egypt. The typical race has also been recorded from Palestine.

Jaculus jaculus deserti Loche, 1867

1867. *Dipus desertii* Loche, Explor. Algér. 100. Ouargla district, Northern Algerian Sahara.

1883. *Dipus darricarrerei* Lataste, Ann. Mus. Civ. Genova, *18:* 661. Bou-Saada, Algerian Sahara.

Range: Algeria, Tunis, Libya. Bullae average a little larger than in Egyptian specimens representing typical race.

Jaculus jaculus loftusi Blanford, 1875

1875. *Dipus loftusi* Blanford, Ann. Mag. N.H. *16:* 312. Mohumrah, Iraq. Range: several localities in Iraq. Bullae average still larger than in the last; skull rather small.

Jaculus jaculus schlüteri Nehring, 1901

1901. *Dipus schlüteri* Nehring, S.B. Ges. Nat. Fr. Berlin, 163. Palestine. (Co-type in B.M. from Jaffa, Palestine.) The skull is larger than other Asiatic specimens available for examination. Only one specimen in London.

Jaculus jaculus sefrius Thomas & Hinton, 1921

1921. *Jaculus jaculus sefrius* Thomas & Hinton, Nov. Zool. *28:* 10. Ain Sefra, Algeria. Skull larger, on average, than other races from the Palaearctic. Range includes Morocco (Cabrera).

Jaculus jaculus vocator Thomas, 1921

1921. *Jaculus loftusi vocator* Thomas, Ann. Mag. N.H. *8:* 441. Sohar, Muscat, Arabia.

1922. *Jaculus jaculus syrius* Thomas, Ann. Mag. N.H. *9:* 296. Karyatein, Syrian Desert.

1924. *Jaculus florentiae* Cheesman & Hinton, Ann. Mag. N.H. *14:* 556. Jabal Aqula, Jabrin (Djabrin), Central Arabia.

JACULUS JACULUS VOCATOR [*contd.*]

1924. *Jaculus florentiae oralis* Cheesman & Hinton, Ann. Mag. N.H. *14:* 557. Koweit, North-Eastern Arabia.

Range: many places in Arabia (Dailami, Matau, Rass, Raushan, Yidda, between Khin and Djabrin, Muscat, Seeb, Koweit, Jafura, Bahrein Island); Zubier in Iraq, and Karyatein (Syrian Desert). With unusually large bullae; essentially like *loftusi*, but skull always a little larger in our material.

JACULUS JACULUS CENTRALIS Thomas & Hinton, 1921

1921. *J aculus*) *j aculus*) *centralis* Thomas & Hinton, Novit. Zool. *28:* 11. Oued-el-Abiad, north of In-Salah, Central Sahara, Algeria.

Jaculus blanfordi Murray, 1884 Blanford's Jerboa

Approximate distribution of species: Persia.

It is near *J. jaculus* but a little larger, bearing much the same relation to it that *Allactaga williamsi* does to *A. euphratica*.

JACULUS BLANFORDI Murray, 1884

1884. *Dipus blanfordi* Murray, Ann. Mag. N.H. *14:* 98. Bushire, Persia. Range: to Seistan, Persia.

Jaculus orientalis Erxleben, 1777 Greater Egyptian Jerboa

Approximate distribution of species: Morocco, Algeria, Libya, Tunis, Egypt.

This species was called "*Scirtopoda gerboa*" by G. Allen, *Checklist African Mammals*, 1939. But the dimensions given by Erxleben in the description of *J. orientalis* clearly indicate a large species and are nearer our specimens of *orientalis* (much larger than any specimen of *J. jaculus* noted). Further, *J. orientalis* is the type of *Jaculus*, therefore *Scirtopoda* cannot be used for this species. *Dipus gerboa* of Olivier seems merely to be a name to separate the larger three-toed Jerboa from the smaller ones then known, and is antedated by *J. orientalis*.

JACULUS ORIENTALIS ORIENTALIS Erxleben, 1777

1777. *Jaculus orientalis* Erxleben, Syst. Regn. Anim. 404. Egypt (mountains separating Egypt from Arabia, G. Allen).

1800. *Dipus gerboa* Olivier, Bull. Soc. Philom. Paris, *2*, 40: 121. Egypt.

1815. *Dipus locusta* Illiger, Abhandl. Ak. Berlin, 77. Egypt, *nom. nud.*

1823. *Dipus bipes* Lichtenstein, Verz. Doublet. Mus. Berlin, 5. Egypt.

Range: North Africa, Egypt, Libya, Tunis, Algeria.

JACULUS ORIENTALIS MAURITANICUS Duvernoy, 1841

1841. *Dipus mauritanicus* Duvernoy, L'Institut, *9:* 400. Oran, Algeria. Range: Algeria (part) and in Morocco, the Rif to the high plateaux (G. Allen). (Not represented in London.)

FAMILY MUSCARDINIDAE

I have followed Miller in calling this family Muscardinidae. Simpson (1945) prefers Gliridae. Gliridae has the merit of brevity, but as some authors wish to suppress the name *Glis*, which dates from Brisson, it seems wiser to retain Muscardinidae as family name.

Genera: *Dryomys*, page 544
Eliomys, page 542
Glirulus, page 542
Glis, page 547
Muscardinus, page 548
Myomimus, page 542
Platacanthomys, page 549
Selevinia, page 541
Typhlomys, page 550

For a key to all these genera, except *Selevinia*, see Ellerman, 1940, *Fam. Gen. Liv. Rodents, 1:* 603, 613, 627. Miller, 1912, *Cat. Mamm. Western Europe*, 549, monographs the four European genera in great detail.

The genus *Selevinia*, usually made the type of a distinct family, has only recently been described. Its peculiarities are well figured by its describers; excessively small cheekteeth (3/3), simple in structure, and excessively enlarged bullae, distinguish it well from the other subfamilies. The mandible has the angular portion perforated. The reduction of the cheekteeth in *Selevinia* parallels that of *Rhynchomys* from the Philippines (family Muridae).

Platacanthomys and *Typhlomys* are referred to a distinct subfamily, the Platacanthomyinae, which is also sometimes (probably unnecessarily) given family rank.

Subfamily Seleviniinae

Genus **SELEVINIA** Belosludov & Bashanav, 1938

1938. *Selevinia* Belosludov & Bashanav, A new genus and species of rodent from the Central Kazakhstan (U.S.S.R.) Uchen. Zap. Kazak. Univ. Alma-Ata, Biol. *1:* 81–86. Two figures, animal, skull, etc. *Selevinia betpakdalaensis* Belosludov & Bashanav.

1 species: *Selevinia betpakdalaensis*, page 541

Selevinia betpakdalaensis Belosludov & Bashanav, 1938 Betpakdala Dormouse

Approximate distribution of species: Betpakdala Desert, Kazakstan, Russian Central Asia (west of Lake Balkash).

Selevinia betpakdalaensis Belosludov & Bashanav, 1938

1938. *Selevinia betpakdalaensis* Belosludov & Bashanav, Uchen. Zap. Kazak. Univ. Alma-Ata, Biol. *1:* 81. Betpakdala Desert, Kazakstan.

Subfamily Muscardininae

Genus **MYOMIMUS** Ognev, 1924

1924. *Myomimus* Ognev, Nature & Sport in Ukraine, Kharkov, 1. *Myomimus personatus* Ognev.

1 species: *Myomimus personatus*, page 542

Myomimus personatus Ognev, 1924 — Mouse-like Dormouse

Approximate distribution of species: Russian Transcaspia, near Persian frontier.

Myomimus personatus Ognev, 1924

1924. *Myomimus personatus* Ognev, Nature & Sport in Ukraine, Kharkov, 1. Near Kaine-Kassir post on the Turkmenian-Persian frontier.

Genus **GLIRULUS** Thomas, 1906

1906. *Glirulus* Thomas, P.Z.S. *1905*, 2: 347. *Graphiurus elegans* Temminck = *Myoxus japonicus* Schinz.

1 species: *Glirulus japonicus*, page 542

Glirulus japonicus Schinz, 1845 — Japanese Dormouse

Approximate distribution of species: Japan, apparently known from Shikoku, Kiushiu and Hondo. (Specimens in British Museum from Fujisan, Hondo.)

Glirulus japonicus Schinz, 1845

1845. *Myoxus javanicus* (*lapsus calami* for *japonicus*) Schinz, Syst. Verz. Säug. *2:* 530. Japan. See Thomas, 1906, *P.Z.S. 1905, 2:* 347, on status of name.

1845. *Myoxus elegans* Temminck, Faun. Japon. Mamm. 52. Province Awa, Shikoku, Japan (*fide* Kuroda). Not of Ogilby, 1838.

1880. *Myoxus lasiotis* Thomas, P.Z.S. 40. Near Yokohama, Hondo, Japan.

Genus **ELIOMYS** Wagner, 1840

1840. *Eliomys* Wagner, Abh. Bayer Akad. Wiss. *3:* 176. *Eliomys melanurus* Wagner.

1885. *Bifa* Lataste, Le Naturaliste, *8:* 61–63. *Bifa lerotina* Lataste = *Myoxus munbyanus* Pomel.

The name *Eliomys* dates from 1840, not 1843 as generally quoted.

2 species: *Eliomys melanurus*, page 544
Eliomys quercinus, page 543

A very large number of specimens representing nearly all the named forms has been examined for this genus, and the conclusion has been reached that all are races of the first-named *E. quercinus* except the South-West Asian *E. melanurus*, which has very large bullae, is very pale in colour, and has a relatively longer tail and ear than any of the other races examined. North African races of *quercinus* have the bullae averaging slightly larger than in European races available.

Eliomys quercinus Linnaeus, 1766 Garden Dormouse

Approximate distribution of species: Spain, Portugal, France, Italy, Sicily, Corsica, Sardinia, Balearic Isles, Switzerland, Germany, Holland, Austria, Poland, Yugoslavia, Bulgaria. Russia, from Ukraine north to Leningrad district and Kalinin Province, Gorki Province, and Tatary, east to Orenburg district (Southern Urals). North Africa, from Libya, Tunis and Algeria to Morocco and Rio de Oro.

Eliomys quercinus quercinus Linnaeus, 1766

1766. *Mus quercinus* Linnaeus, Syst. Nat. 12th ed. *1:* 84. Germany.
1782. *Myoxus nitela* Schreber, Säugeth., pl. 226 (text 4: 833, *1787*) Germany.
1904. *Eliomys hortualis* Cabrera, Bol. Real. Soc. Esp. H.N. *4:* 183. Valencia, Spain.
1907. *Eliomys hamiltoni* Cabrera, Bol. Real. Soc. Esp. H.N. *7:* 226. El Pardo, near Madrid, Spain.

Other possible synonyms include:

1920. *Eliomys quercinus rāticus* Burg, Der Weidmann Bulach, No. 50, 401 (*N.V.*)
1920. *Eliomys quercinus gotthardus* Burg, *loc. cit.* Munstertal, Switzerland.
1920. *Eliomys quercinus jurassicus* Burg, *loc. cit.* Jura Valleys.

Range: France and Germany to Switzerland, Yugoslavia, Northern Italy, Central Spain.

Eliomys quercinus munbyanus Pomel, 1856

1856. *Myoxus munbyanus* Pomel, C.R. Acad. Sci. Paris, *42:* 653. Province of Oran, Algeria (G. Allen).
1885. *Bifa lerotina* Lataste, Le Naturaliste, *3:* 61. Ghardaia, Mzab, Algerian Sahara.
1903. *Eliomys lerotinus tunetae* Thomas, Ann. Mag. N.H. *11:* 495. Karouana, Tunis.

Range: Morocco, Algeria, Tunis.

Eliomys quercinus lusitanicus Reuvens, 1890

1890. *Eliomys nitela* var. *lusitanica* Reuvens, Die Myoxidae oder Schlaefer, 28 (footnote). Lisbon, Portugal.
1897. *Myoxus nitela* var. *amori* Graells, Mem. Real. Ac. Sci. Madrid, *17:* 481. Cordova, Spain.

Range: Southern Spain, Portugal.

Eliomys quercinus pallidus Barrett-Hamilton, 1899

1899. *Eliomys pallidus* Barrett-Hamilton, Ann. Mag. N.H. *3:* 226. Palermo, Sicily.
1901. *Eliomys cincticauda* Miller, Proc. Biol. Soc. Washington, *14:* 39. Sorrento, Italy.

Range: Sicily, Southern Italy.

Eliomys quercinus sardus Barrett-Hamilton, 1901

1901. *Eliomys sardus* Barrett-Hamilton, Ann. Mag. N.H. *7:* 340. Tricoli, Cagliastra, Sardinia. Range includes Corsica.

Eliomys quercinus gymnesicus Thomas, 1903

1903. *Eliomys gymnesicus* Thomas, Ann. Mag. N.H. *11:* 494. San Cristobal, Minorca, Balearic Isles.

ELIOMYS QUERCINUS OCCIDENTALIS Thomas, 1903

1903. *Eliomys lerotinus occidentalis* Thomas, Nov. Zool. *10:* 300. Rio de Oro, North-West Africa.

ELIOMYS QUERCINUS CYRENAICUS Festa, 1922

1922. *Eliomys cyrenaicus* Festa, Boll. Mus. Zool. Anat. Comp. Torino, 740, 4. Gheminez, Cyrenaica, Libya.

ELIOMYS QUERCINUS OPHIUSAE Thomas, 1925

1925. *Eliomys ophiusae* Thomas, Ann. Mag. N.H. *16:* 389. Formentera, Balearic Islands.

ELIOMYS QUERCINUS SUPERANS Ognev & Stroganov, 1936

1936. *Eliomys quercinus superans* Ognev & Stroganov, Abstr. Works. Zool. Inst. Moscow St. Univ. *3:* 84. Former Ostashov subdistrict of Tver Govt., Kalinin Province (River Chukopa), Russia.

Eliomys melanurus Wagner, 1840 South-West Asian Garden Dormouse

Approximate distribution of species: Sinai, Syria, Palestine, North-Western Arabia.

ELIOMYS MELANURUS Wagner, 1840

1840. *Eliomys* (*Myoxus*) *melanurus* Wagner, Abh. Bayer Akad. Wiss. 176, pl. 3, fig. 1. Sinai.

Specimens examined from Nohel in Sinai, Karyatein, Syrian Desert, and near Medain Saleh (26°50′ N., 38°20′ E.) in Arabia.

Genus **DRYOMYS** Thomas, 1906

1906. *Dryomys* Thomas, P.Z.S. *1905, 2:* 348. *Mus nitedula* Pallas.

1907. *Dyromys* Thomas, Ann. Mag. N.H. *20:* 406. To replace *Dryomys*, under the impression that it was preoccupied. (See Simpson, 1945, Bull. Amer. Mus. N.H. *85:* 92, footnote.)

1 species: *Dryomys nitedula*, page 544

Dryomys nitedula Pallas, 1779 Forest Dormouse

Approximate distribution of species: Switzerland, North-Eastern Italy, Austria, Germany (part), Czechoslovakia, Yugoslavia, Rumania, Bulgaria, Greece, Poland, Russia, as far north as Central districts of White Russia, Kalinin, Ryazan and Gorki Provinces, and Tatary, Caucasus, Transcaucasia, Southern and Eastern Russian Turkestan (including "apparently the Southern Altai" (Kuznetzov)), Tarbagatai Mountains; Chinese Turkestan; Asia Minor, Persia, Afghanistan, to Indian North-West Frontier.

A very large number of races are now named. We have not many of them in London, and all that are represented seem little differentiated. The following may be valid: *angelus*, skull larger than others in London material; *robusta*, bullae rather enlarged; *phrygius* (brown) and *picta* (grey); Asiatic races with, on average, a rather larger ear than the European *nitedula* (brown) and *intermedius* (grey).

Dryomys nitedula nitedula Pallas, 1779

1779. *Mus nitedula* Pallas, Nov. Spec. Quad. Glir. Ord. 88. Region of Lower Volga, Russia.

1782. *Myoxus dryas* Schreber, Säugeth., pl. 225B (text, *1787, 4:* 831). Region of Lower Volga.

Range: Russia (Volga region), also Rumania, Serbia.

Dryomys nitedula pictus Blanford, 1875

1875. *Myoxus pictus* Blanford, Ann. Mag. N.H. *16*: 311. Kohrud, south of Caspian Sea, Persia. Range: Persia, Afghanistan, North-West Frontier (India).

Dryomys nitedula wingei Nehring, 1902

1902. *Myoxus wingei* Nehring, S.B. Ges. Nat. Fr. Berlin, 5. Parnassus region, Greece. Perhaps = the typical race.

Dryomys nitedula intermedius Nehring, 1902

1902. *Myoxus intermedius* Nehring, S.B. Ges. Nat. Fr. Berlin, 155. Near Lienz, Tyrol, Austria. Range apparently includes Yugoslavia (part) and Zuberec, Hungary (? Slovakia).

Dryomys nitedula angelus Thomas, 1906

1906. *Eliomys (Dryomys) angelus* Thomas, Ann. Mag. N.H. *17:* 424. Russian Tianshan Mountains, probably near Przewalsk.

Dryomys nitedula phrygius Thomas, 1907

1907. *Dyromys nitedula phrygius* Thomas, Ann. Mag. N.H. *20:* 407. Murad Dagh, Ushak Province, 7,500 ft., Asia Minor.

Dryomys nitedula robustus Miller, 1910

1910. *Dyromys robustus* Miller, Ann. Mag. N.H. *6:* 459. Rustchuk, Bulgaria.

Dryomys nitedula milleri Thomas, 1912

1912. *Dyromys milleri* Thomas, Ann. Mag. N.H. *9:* 394. Bogdo-Ola Mountains, Zungaria, Chinese Central Asia.

Dryomys nitedula tichomirowi Satunin, 1920

1920. *Dyromys nitedula tichomirowi* Satunin, Trav. Mus. Georg. Tiflis, *2:* 161. Tbilisi, Tiflis, Transcaucasia.

DRYOMYS NITEDULA OBOLENSKII Ognev & Worobiev, 1923

1923. *Dyromys nitedula obolenskii* Ognev & Worobiev, Fauna Woronesh, 129. Kherson pine forest, Voronej Province, Russia. Range: Ukraine, Orlovsk, Kursk, Voronej, Ryazan, Tambov Provinces, Russia.

DRYOMYS NITEDULA CARPATHICUS Brohmer, 1927

1927. *Dyromys nitedula carpathicus* Brohmer, Die Tierw. Mitt. Europ. *7*, 3: 32. Upper Silesia.

DRYOMYS NITEDULA BILKJEWICZI Ognev & Heptner, 1928

1928. *Dyromys nitedula bilkjewiczi* Ognev & Heptner, Zool. Anz. *75:* 265. According to Kuznetzov the type locality is near Germab, Turkmenia. Range: Kopet-Dag Mountains, South-Western Turkestan.

DRYOMYS NITEDULA OGNEVI Heptner & Formozov, 1928

1928. *Dyromys nitedula ognevi* Heptner & Formozov, Zool. Anz. *77:* 278. Akhtui, River Samur, Southern Daghestan, 4,000 ft., Caucasus.

DRYOMYS NITEDULA DAGHESTANICUS Ognev & Turov, 1935

1935. *Dyromys nitedula daghestanicus* Ognev & Turov, Wiss. Ber. Moskauer Staats Univ. *4:* 98. Khasav-Yurt, Daghestan, Caucasus.

DRYOMYS NITEDULA TANAITICUS Ognev & Turov, 1935

1935. *Dyromys nitedula tanaiticus* Ognev & Turov, Wiss. Ber. Moskauer Staats Univ. *4:* 98. Atamanovsky Khutor, Tarasovsky district, former Don Province, Russia.

DRYOMYS NITEDULA CAUCASICUS Ognev & Turov, 1935

1935. *Dyromys nitedula caucasicus* Ognev & Turov, Wiss. Ber. Moskauer Staats Univ. *4:* 98. Environs of Tarskaja Station, former Tersk Province, Northern Caucasus.

DRYOMYS NITEDULA KURDISTANICUS Ognev & Turov, 1935

1935. *Dyromys nitedula kurdistanicus* Ognev & Turov, Wiss. Ber. Moskauer Staats Univ. *4:* 101. River Terter, Western Azerbaijan. Range: mountains of South-Eastern Transcaucasia. Kuznetzov thinks it may be identical with *D. n. picta*.

DRYOMYS NITEDULA PALLIDUS Ognev & Turov, 1935

1935. *Dyromys nitedula pallidus* Ognev & Turov, Wiss. Ber. Moskauer Staats Univ. *4:* 102. Valley of River Boskurchai, Karatau Mountains, former province of Syr Darya, Russian Turkestan. Range: Usbekistan.

DRYOMYS NITEDULA SAXATILIS Rosanov, 1935

1935. *Dyromys nitedula saxatilis* Rosanov, Rep. Tadjik. Compl. Exped. *32:* 45–46. (N.V. Reference from Ognev.) Round Darshar Post, Eastern Pamir Mountains.

Genus **GLIS** Brisson, 1762

1762. *Glis* Brisson, Regn. Anim. 2nd ed. 13 and 113. *Glis* Brisson = *Sciurus glis* Linnaeus.
1780. *Myoxus* Zimmermann, Geogr. Ges. *2:* 351. *Sciurus glis* Linnaeus.
1900. *Elius* Schulze, Zeits. Naturwiss. Stuttgart, *73:* 200 (in part; included *glis* and *nitedula*).

1 species: *Glis glis*, page 547

Hopwood, 1947, *P.Z.S* 535, would ignore names from Brisson and call this genus *Myoxus* Zimmermann, 1780, proposing to use *Glis* Erxleben, 1777, for "Marmots, etc." The type of *Glis* Erxleben has been designated as *Glis zemni* Erxleben, a species of *Spalax* Güldenstaedt, 1770 (Ellerman, 1949, *Ann. Mag. N.H. 2:* 893–894).

The retention of *Glis* for the Fat Dormouse, as from Brisson, 1762, seems desirable as the name is in almost universal use, and until a ruling on the point can be obtained from the International Commission on Zoological Nomenclature we prefer to use *Glis* rather than resuscitate *Myoxus*.

Glis glis Linnaeus, 1766 — Fat Dormouse

Approximate distribution of species: Northern Spain, France, Switzerland, Italy, Sicily, Sardinia, Germany, Holland, Austria, Yugoslavia, Rumania, Bulgaria; Poland, Russia; Kuznetzov gives the range as north to White Russia, Tula Province, south of Gorki Province, east to Volga, south to Saratov, Voronej, Chernigov, Kiev; Caucasus and Transcaucasia. Has been reported from Kopet-Dag, South-Western Turkestan. Asia Minor, Persia, Palestine.

There seem to be too many named races in this species.

Glis glis glis Linnaeus, 1766

1766. *Sciurus glis* Linnaeus, Syst. Nat. 12th ed. *1:* 87. Germany.
1779. *Glis esculentus* Blumenbach, Hand. Nat. 79. Central Europe.
1816. *Glis vulgaris* Oken, Lehrb. Nat. *3*, 2: 868. Germany.
(?) 1832. *Myoxus giglis* F. Cuvier, Nouv. Ann. Mus. H.N. Paris, *1:* 444, *nom. nud.*
1840. *Myoxus avellanus* Owen, Odontography, *2:* 25, pl. 105.
(?) 1920. *Glis glis subalpinus* Burg, Der Weidmann Bulach, No. 52, 419. (*N.V.*)

Range: France, Germany, Austria, Italy, Switzerland, Yugoslavia, Rumania, Russia.

Glis glis persicus Erxleben, 1777

1777. *Sciurus persicus* Erxleben, Syst. Regn. Anim. *1:* 417. Province of Gilan, Persia. Topotypical specimens in B.M. Large race, larger in skull size than the typical race, more like the next.

Glis glis italicus Barrett-Hamilton, 1898

1898. *Glis italicus* Barrett-Hamilton, Ann. Mag. N.H. *2:* 424. Siena, Italy.
1899. *Glis insularis* Barrett-Hamilton, Ann. Mag. N.H. *3:* 228. Monte Aspro, Palermo, Sicily.
1923. *Glis glis postus* Montagu, P.Z.S. 866. Veliki Dergoncl, the Gorski Kotar, Croatia, Yugoslavia.

Range: Sicily, Italy, Yugoslavia (in part).

GLIS GLIS ORIENTALIS Nehring, 1903

1903. *Myoxus glis orientalis* Nehring, S.B. Ges. Nat. Fr. Berlin, 187. Alan Dagh Mountains, near Scutari, Asia Minor. Ranges south to Palestine, according to Bodenheimer.

GLIS GLIS CASPIUS Satunin, 1905

1905. *Myoxus glis caspius* Satunin, Verz. Saug. Transkaspiens (Russ.), *25*, 3: 55. Emended to *caspicus* Satunin, 1905, Mitt. Kaukas. Mus. *2:* 76. Chuliysk Gorge, 40 versts from Askhabad, Transcaspia. Range: to Transcaucasia.

GLIS GLIS SPOLIATUS Thomas, 1906

1906. *Glis glis spoliatus* Thomas, Ann. Mag. N.H. *18:* 220. Khotz, near Trebizond, Northern Asia Minor.

GLIS GLIS MELONII Thomas, 1907

1907. *Glis melonii* Thomas, Ann. Mag. N.H. *19:* 445. Marcurighè, Urzulei, Ogliastra, Sardinia.

GLIS GLIS PYRENAICUS Cabrera, 1908

1908. *Glis glis pyrenaicus* Cabrera, Ann. Mag. N.H. *1:* 193. Allo, Navarre, Spain.

GLIS GLIS INTERMEDIUS Altobello, 1920

1920. *Glis italicus intermedius* Altobello, Fauna dell'Abruzzo e del Molise, Mamm. *3*, Rodentia: 22. Abruzzi e Molise, Italy (no exact locality).

GLIS GLIS TSCHETSHENICUS Satunin, 1920

1920. *Glis glis tschetshenicus* Satunin, Trav. Mus. Georg. Tiflis, *2:* 150. Chechen, River Shara-Argun, Caucasus.

GLIS GLIS ABRUTTII Altobello, 1924

1924. *Glis glis abruttii* Altobello, Rend. Union. Zool. 30, fig. in Monitore Zool. Ital. 35. Campobasso, Abruzzi, Southern Italy.

GLIS GLIS MINUTUS Martino, 1930

1930. *Glis glis minutus* Martino, Proc. Russ. Sci. Inst. Belgr. *2:* 60. Predejane, 30 km. south of Leskovac, Serbia, Yugoslavia.

GLIS GLIS PETRUCCII Goodwin, 1939

1939. *Glis glis petruccii* Goodwin, Amer. Mus. Nov. 1050, 1. Gouladah foothills of the Kurkhud Mountains, district Bujnurd, about 3,000 ft., North-Eastern Persia.

Genus **MUSCARDINUS** Kaup, 1829

1829. *Muscardinus* Kaup, Skizz. Europ. Thierwelt, *1:* 139. *Mus avellanarius* Linnaeus.

1 species: *Muscardinus avellanarius*, page 549

Muscardinus avellanarius Linnaeus, 1758 Common Dormouse
Hazel Dormouse

Approximate distribution of species: England, France, Switzerland, Italy, Sicily, Sweden, Denmark, Germany, Holland, Hungary, Yugoslavia, Rumania, Greece; Russia, from Ukraine northwards to Minsk, Kalinin, Ivanovo and Gorki Provinces, and to Tatary, south to Kuibuishev, Kharkov, Poltava, Dnepropetrovsk and Odessa Provinces. Poland. Asia Minor.

Muscardinus avellanarius avellanarius Linnaeus, 1758

1758. *Mus avellanarius* Linnaeus, Syst. Nat. 10th ed. *1:* 62. Central Sweden.
1782. *Myoxus muscardinus* Schreber, Säugeth., pl. 227 (text, *1788, 4:* 835). Germany.
1869. *Mus corilinum* Fatio, Faune Vert. Suisse, *1:* 183.
1900. *Muscardinus avellanarius anglicus* Barrett-Hamilton, P.Z.S. 86. Bedford Purlieus, Thornhaugh, Northamptonshire, England.

Range: England, France, Germany, Switzerland, Italy (in part), Rumania, Yugoslavia, Slovakia, to Russia.

Muscardinus avellanarius pulcher Barrett-Hamilton, 1898

1898. *Muscardinus pulcher* Barrett-Hamilton, Ann. Mag. N.H. *2:* 423. Environs of Perugia, Italy. (Type in B.M. The original description says it came from Siena, where the dealer lived from whom it was purchased.)
(?) 1855. *Myoxus speciosus* Dehne, Allgem. Deutsche Naturhist. Zeitung, *1:* 180. Tursi, Basilicata, Italy.

Range: Italy (in part) and Sicily.

Muscardinus avellanarius trapezius Miller, 1908

1908. *Muscardinus trapezius* Miller, Ann. Mag. N.H. *1:* 69. Khotz, Trebizond, Northern Asia Minor. A valid race, with relatively small bullae.

Muscardinus avellanarius niveus Altobello, 1920

1920. *Muscardinus avellanarius niveus* Altobello, Fauna dell' Abruzzo e del Molise, Mamm. *3*, Rodentia: 27. Abruzzi e Molise, Italy.

Muscardinus avellanarius zeus Chaworth-Musters, 1932

1932. *Muscardinus avellanarius zeus* Chaworth-Musters, Ann. Mag. N.H. *9:* 170. Eastern slope Mt. Olympus, Thessaly, 800 m. Greece. This seems to be based on a form which resembles *trapezius* in its small bullae.

Subfamily Platacanthomyinae

Genus **PLATACANTHOMYS** Blyth, 1859

1859. *Platacanthomys* Blyth, J. Asiat. Soc. Bengal, *28:* 288. *Platacanthomys lasiurus* Blyth

1 species: *Platacanthomys lasiurus*, page 550

Platacanthomys lasiurus Blyth, 1859 Malabar Spiny Dormouse

Approximate distribution of species: Coorg, Travancore, and Malabar in Southern Peninsular India.

Platacanthomys lasiurus Blyth, 1859

1859. *Platacanthomys lasiurus* Blyth, J. Asiat. Soc. Bengal, *28:* 289. Alipi, Malabar, India.

Genus **TYPHLOMYS** Milne-Edwards, 1877

1877. *Typhlomys* Milne-Edwards, Bull. Soc. Philom. Paris, *13*, 6: 9. *Typhlomys cinereus* Milne-Edwards.

1 species: *Typhlomys cinereus*, page 550

Typhlomys cinereus Milne-Edwards, 1877 Chinese Pygmy Dormouse

Approximate distribution of species: Fukien, in South-Eastern China; and Tonkin, Northern Indo-China.

Typhlomys cinereus cinereus Milne-Edwards, 1877

1877. *Typhlomys cinereus* Milne-Edwards, Bull. Soc. Philom. Paris, *13*, 6: 9. Western Fukien, China.

Typhlomys cinereus chapensis Osgood, 1932

1932. *Typhlomys cinereus chapensis* Osgood, Field Mus. Publ. Zool. *18*, 298. Chapa, Tonkin, Northern Indo-China.

The remaining three families belong to the Superfamily Muroidea. The Spalacidae and Rhizomyidae may probably be regarded as highly specialized fossorial offshoots of the Cricetine type.

FAMILY RHIZOMYIDAE

Genera: *Cannomys*, page 552
Rhizomys, page 550

For key to genera and species, see Ellerman, 1947, *J. Mamm. 28:* 273–274.

Genus **RHIZOMYS** Gray, 1831

1831. *Rhizomys* Gray, P.Z.S. 95. *Rhizomys sinensis* Gray.

1832. *Nyctocleptes* Temminck, Bijdragen Nat. Wetensch. Amsterdam, *7*: 5, pl. 1. *Mus sumatrensis* Raffles. Valid as a subgenus.

3 species: *Rhizomys pruinosus*, page 551 *Rhizomys sumatrensis*, page 552
Rhizomys sinensis, page 551

Subgenus *RHIZOMYS* Gray, 1831

Rhizomys sinensis Gray, 1831 Chinese Bamboo Rat

Approximate distribution of species: Southern China, from Szechuan (north to borders of Kansu: G. Allen), Yunnan, apparently Kwantung, Fukien; Hupeh; has been recorded from Southern Shensi (Tsingling Mountains); Northern Burma.

Rhizomys sinensis sinensis Gray, 1831

1831. *Rhizomys sinensis* Gray, P.Z.S. 95. Near Canton, Kwantung is the type locality according to G. Allen. (Type skull in B.M., marked "China".)

1870. *Rhizomys chinensis* Swinhoe, P.Z.S. 637. Range probably includes Kwangsi, China.

Rhizomys sinensis vestitus Milne-Edwards, 1872

1872. *Rhizomys vestitus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7, Bull.: 92. West of Moupin, Szechuan, China. Range: Szechuan, Hupeh; northern part of Chinese range of species.

Rhizomys sinensis davidi Thomas, 1911

1911. *Rhizomys davidi* Thomas, Abstr. P.Z.S. 5; P.Z.S. *1911:* 179. Kuatun, Fukien, South-Eastern China.

Rhizomys sinensis wardi Thomas, 1921

1921. *Rhizomys wardi* Thomas, J. Bombay N.H. Soc. *27,* 3: 504. Mt. Imaw Bum, Kachin Province, 9,000 ft., Northern Burma. Range: Yunnan, Northern Burma.

Rhizomys pruinosus Blyth, 1851 Hoary Bamboo Rat

Approximate distribution of species: Yunnan, Kwantung, Assam, Eastern Burma, Indo-China, Siam, Malay States (Perak).

Rhizomys pruinosus pruinosus Blyth, 1851

1851. *Rhizomys pruinosus* Blyth, J. Asiat. Soc. Bengal, *20:* 519. Cherrapunji, Khasi Hills, Assam.

1915. *Rhizomys senex* Thomas, Ann. Mag. N.H. *16:* 313. Southern Yunnan, probably near Mongtse (Mengtsz), China.

Range: Khasi Hills, Naga Hills, etc. in Assam, Manipur, east of Bhamo, Eastern Burma; Tonkin, Laos, Annam, in Indo-China; and Southern Yunnan.

Rhizomys pruinosus latouchei Thomas, 1915

1915. *Rhizomys latouchei* Thomas, Ann. Mag. N.H. *16:* 59. Swatow, Kwantung, Southern China.

1930. *Rhizomys prusianus* Shih, Dept. Biol. Sun Yatsen Univ. Canton, *4:* 9 (*lapsus*).

Range: Kwantung, and perhaps Kwangsi. The only specimen available, the type, has a distinctly aberrant skull, with wide frontals and low occiput.

RHIZOMYS PRUINOSUS PANNOSUS Thomas, 1915

1915. *Rhizomys pannosus* Thomas, Ann. Mag. N.H. *16:* 60. Chantabun, Southern Siam. A short-furred race.

Subgenus *NYCTOCLEPTES* Temminck, 1832

Rhizomys sumatrensis Raffles, 1821 Large Bamboo Rat

Approximate distribution of species: Sumatra, Malay States, Siam, Indo-China, Burma north to Shan States, Tenasserim.

(RHIZOMYS SUMATRENSIS SUMATRENSIS Raffles, 1821. Extralimital)

1821. *Mus sumatrensis* Raffles, Trans. Linn. Soc. London, *13*: 258. Malacca.

RHIZOMYS SUMATRENSIS CINEREUS M'Clelland, 1841

1841. *Rhizomys cinereus* M'Clelland, Calcutta, J.N.H. *2*: 456. Moulmein, Tenasserim.

1877. *Rhizomys erythrogenys* Anderson, Proc. Asiat. Soc. Bengal, 150. Salween Hill Tracts, Burma.

Range: Siam (southwards apparently to Pahang), Indo-China, Tenasserim, Burma.

Genus **CANNOMYS** Thomas, 1915

1915. *Cannomys* Thomas, Ann. Mag. N.H. *16:* 57. *Rhizomys badius* Hodgson.

1 species: *Cannomys badius*, page 552

Cannomys badius Hodgson, 1841 Bay Bamboo Rat; Lesser Bamboo Rat

Approximate distribution of species: Nepal, Assam, Burma, Tenasserim, Siam.

The Indian races listed here can be distinguished. I have examined many examples of this species, but have not been able to discover if the Siamese race, *minor*, can be separated from *badius*. I rather doubt it. The form *lönnbergi* is unrepresented in London.

CANNOMYS BADIUS BADIUS Hodgson, 1841

1841. *Rhizomys badius* Hodgson, Calcutta J.N.H. *2*: 60, 410 (April, 1841). Nepal. Range: Nepal, Darjeeling district, Bhutan Duars, Manipur, Assam, where it is common, to Western Burma.

CANNOMYS BADIUS MINOR Gray, 1842

1842. *Rhizomys minor* Gray, Ann. Mag. N.H. *10:* 266. Southern Siam (probably Pachaburi, south-west of Bangkok). Known from several places in Siam.

CANNOMYS BADIUS CASTANEUS Blyth, 1843

1843. *Rhizomys castaneus* Blyth, J. Asiat. Soc. Bengal, *12:* 1007. Probably Arakan, Burma.

1915. *Cannomys badius plumbescens* Thomas, Ann. Mag. N.H. *16:* 315. Gokteik, Northern Shan States, Burma.

Range: Shan States, Toungoo district, Burma, and Tenasserim (part).

CANNOMYS BADIUS PATER Thomas, 1915

1915. *Cannomys pater* Thomas, Ann. Mag. N.H. *16:* 315. Mt. Popa, dry zone of Burma.

CANNOMYS BADIUS LÖNNBERGI Gyldenstolpe, 1917

1917. *Cannomys minor lonnbergi* Gyldenstolpe, K. Svenska Vetensk. Akad. Handl. *57*, 2: 47. Sakerat, Eastern Siam.

FAMILY SPALACIDAE

Genus: *Spalax*, page 553

Genus **SPALAX** Güldenstaedt, 1770

1770. *Spalax* Güldenstaedt, Nov. Com. Acad. Imp. Sci. Petrop. *14*, 1: 410. *Spalax microphthalmus* Güldenstaedt.
1777. *Glis* Erxleben, Syst. Regn. Anim. *1:* 358. Not of Brisson, 1762. *Glis zemni* Erxleben. (See Ellerman, 1949, Ann. Mag. N.H. *2:* 893–894.)
1783. *Myospalax* Hermann, Tab. Affin. Anim. 83. *Myospalax laxmanni* Hermann = *Spalax microphthalmus* Güldenstaedt. Not of Laxmann, 1769.
1799. *Talpoides* Lacepède, Tabl. Div. etc. Mamm. 10. *Mus typhlus* Pallas = *Spalax microphthalmus* Güldenstaedt.
1804. *Aspalax* Desmarest, Nouv. Dict. H.N. *24*, Tab. Méth. Mamm.: 24. *Mus typhlus* Pallas = *Spalax microphthalmus* Güldenstaedt.
1815. *Anotis* Rafinesque, Anal. de la Nature, 58. Substitute for *Talpoides*.
(?) 1840. *Ommatostergus* Nordmann, in Keyserling & Blasius, Wirbelth. Europ. vii, 31, *nom. nud. O. pallasi* Nordman.
1898. *Microspalax* Nehring, S.B. Ges. Nat. Fr. Berlin, *1897*, 168. Subgeneric name for smaller species of *Spalax*; not of Trouessart, 1885.
1903. *Nannospalax* Palmer, Science, N.S. *17:* 873. Substitute for *Microspalax*. *Spalax kirgisorum* Nehring.
1909. *Mesospalax* Méhely, A Földi Kutyák Fajai, Budapest, 22. *Spalax monticola* Nehring.
1909. *Macrospalax* Méhely, A Földi Kutyák Fajai, Budapest, 23. New name for *Spalax sensu stricto*.
1922. *Ujhelyiana* Strand, Arch. Nat. Berlin, *88*, A, 4: 142. To replace *Microspalax* Nehring (but antedated by *Nannospalax* Palmer).

3 species: *Spalax ehrenbergi*, page 556
Spalax leucodon, page 555
Spalax microphthalmus, page 554

Méhely monographed this genus in 1909 and divided it into three subgenera, which I followed in my former work (1940, 638), and from Méhely a table of supposed differences was given between the three subgeneric types. Since then we have received more material of this genus in the British Museum, and these specimens seem

to break down the validity of most of those characters. I am quite sure that no subgenera can be recognized in this genus, and I begin to doubt whether there are really more than two species (*ehrenbergi* and *microphthalmus*), as the characters separating *leucodon* from *microphthalmus* are very slight in our material. Size of skull certainly will not separate the last two; and height of skull, given by Kuznetzov to divide the two species, will not do so either in our material. There remains the small supra-condylar foramen, present or absent as the case may be, and apparently not constant. I suspect it is a variable character in *leucodon*. We have a "family party" of *S. leucodon* subsp. from Ankara, Turkey, ranging from all ages to one prodigious individual, very old, which has a larger skull than any *S. microphthalmus* available in London, and just as high, or even higher, than our *microphthalmus* skulls. *Spalax ehrenbergi*, of which we have many specimens, is distinguishable from the others by having M 3 with two (not one) isolated islands in the adult, and the lower incisor knob little or not higher than the condylar process, whereas in *leucodon* and *microphthalmus* it tends to be higher than the condylar process; the character of the isolated islands in M 3 is clearer in our material. For the use of the name *ehrenbergi* for the African-Palestine species, see Bate, 1945, *Ann. Mag. N.H. 12:* 146, and for the use of *leucodon* as first name for the *hungaricus-monticola* series, see Vinogradov, 1941, *Faune de L'U.R.S.S., Inst. Zool. Acad. de L'U.R.S.S.*, No. 29, 149. I think that in all probability *leucodon* will not divide into races. An enormous number of names are standing based on differences which often could just as well be individual or "family party" characters rather than subspecific characters as usually understood. Méhely's monograph savours of super-splitting.

Spalax microphthalmus Guldenstaedt, 1770 Russian Mole Rat

Approximate distribution of species: steppe and forest-steppe area of Southern Russia, as far north as Chernigov, Tula, Penza and Ulyanovsk, east to the Lower River Emba (extreme Western Siberia), south to foot of Caucasus and Perekop, and west to Western Ukraine (Kuznetzov); forms which are likely to be subspecies also have been named from Rumania, Greece and Poland.

Spalax microphthalmus microphthalmus Guldenstaedt, 1770

1770. *Spalax microphthalmus* Guldenstaedt, Nov. Comm. Ac. Sci. Imp. Petrop. *14*, 1: 411. Steppes of Nobochopersk, Southern Russia.

1779. *Mus typhlus* Pallas, Nov. Spec. Quad. Glir. Ord. 76, 154, pl. 8. Southern Russia.

1839. *Spalax pallasii* Nordmann, Bull. Ac. St. Pétersb. *5*, 13: 200.

Range: Russia, between the Volga and Dnieper.

Spalax microphthalmus zemni Erxleben, 1777

1777. *(Glis) zemni* Erxleben, Syst. Regn. An. Mamm. 370. Podolia, Ukraine, Southern Russia.

1897. *Spalax microphthalmus podolicus* Trouessart, Cat. Mamm. *1:* 570. Based on the Podolian Marmot of Pennant (1771, Synop. Quadr. 277). Podolia, Ukraine.

1909. *Spalax polonicus* Méhely, A Földi Kutyák Fajai, Budapest, 194. (Also based on the Podolian Marmot of Pennant.)

Range: Ukraine, west of the Dnieper (except Odessa Province). Poland.

Spalax microphthalmus giganteus Nehring, 1898

1898. *Sapalx giganteus* Nehring, S.B. Ges. Nat. Fr. Berlin, *1897*, 169. Petrovsk (Makhuch-Kala), Caspian Sea, Russia. For status, see Kuznetzov, 1944. Range: steppes of Kalmykia, Daghestan Plain, and lower Rivers Ural and Emba.

1939. *Spalax giganteus uralensis* Tiflov & Usov, Vestn. Microbiol. Epidemiol. & Parasitol. *17:* 141. Chingerlauz region, Western Kazakstan.

Spalax microphthalmus graecus Nehring, 1898

1898. *Spalax graecus* Nehring, Zool. Anz. *21:* 228. ? Neighbourhood of Athens, Greece.

Spalax microphthalmus antiquus Méhely, 1909

1909. *Spalax graecus antiquus* Méhely, A Földi Kutyák Fajai, Budapest, 175. Rumania.

Spalax microphthalmus istricus Méhely, 1909

1909. *Spalax istricus* Méhely, A Földi Kutyák Fajai, Budapest, 186. Barza, Rumania.

Spalax microphthalmus mezöségiensis Szunyoghy, 1937

1937. *Spalax graecus mezöségiensis* Szunyoghy, Allat Közlem. Budapest, *34:* 186, 190. Siebenburgen, Rumania.

Spalax microphthalmus arenarius Reshetnik, 1938

1938. *Spalax polonicus arenarius* Reshetnik, Reports Zool. Mus. Kiev, No. 23, 11. Gola-Pristan, Nikolaiev district, Southern Ukraine, Russia.

Spalax leucodon Nordmann, 1840 Lesser Mole Rat

Approximate distribution of species, as here understood: Hungary, Bulgaria, Rumania, Yugoslavia, Greece, Turkey, Asia Minor, Western Ukraine, Transcaucasia.

Spalax leucodon Nordmann, 1840

1840. *Spalax typhlus leucodon* Nordmann, Demidoff Voy. *3*, 34. Near Odessa, Russia.

As stated above, I have my doubts if this species will divide satisfactorily into races at all. A party of individuals from Ankara, Asia Minor, young adult to very old, in the British Museum, vary in occipitonasal length of skull between 41.6 and 56.4 mm., height of occiput 15–18.1 mm. These seem to cover all cranial differences which I had previously supposed might be of subspecific value in all forms represented in London, of which we have about a dozen. The following eighteen names are standing (the first of which I insert in this species on geographical grounds).

1840. *Spalax typhlus xanthodon* Nordmann, Demidoff Voy. *3*, 35. Smyrna, Western Asia Minor.

1898. *Spalax typhlus hungaricus* Nehring, S.B. Ges. Nat. Fr. Berlin, *1897*, 173. Hungary.

1898. *Spalax monticola* Nehring, S:B. Ges. Nat. Fr. Berlin, 6. Kupres, Bosnia, Yugoslavia.

1898. *Spalax nehringi* Satunin, Zool. Anz. *21:* 314. Kasikoporan, Armenia, Transcaucasia. Range: to Erzerum, Northern Asia Minor (B.M. specimen).

SPALAX LEUCODON [*contd.*]

1903. *Spalax dolbrogeae* Miller, Proc. Biol. Soc. Washington, *16:* 161. Malcoci, Dobrudscha, Rumania. Range includes Bulgaria.
1909. *Spalax monticola armeniacus* Méhely, A Földi Kutyak Fajai, Budapest, 79. Kura-Quellan, Armenia, Transcaucasia. ? = *nehringi*.
1909. *Spalax monticola cilicicus* Méhely, *loc. cit.* 84. Cilician Taurus, Asia Minor.
1909. *Spalax monticola anatolicus* Méhely, *loc. cit.* 88. Burnabad, near Smyrna, Asia Minor. ? = *xanthodon*.
1909. *Spalax monticola hellenicus* Méhely, *loc. cit.* 100. Lamia, Thessaly, Greece.
1909. *Spalax monticola turcicus* Méhely, *loc. cit.* 105. Makri-Koi, Constantinople, Turkey.
1909. *Spalax monticola hercegovinensis* Méhely, *loc. cit.* 129. Ulog-Obruga, Hercegovina, Yugoslavia.
1909. *Spalax monticola syrmiensis* Méhely, *loc. cit.* 133. Szerem, Slavonia, Yugoslavia.
1909. *Spalax monticola serbicus* Méhely, *loc. cit.* 140. Serbia, Yugoslavia.
1909. *Spalax hungaricus transsylvanicus* Méhely, *loc. cit.* 159. Transylvania.
1917. *Spalax monticola insularis* Thomas, Ann. Mag. N.H. *20:* 315. Mudros, Isle of Lemnos, Greece.
1919. *Spalax labaumei* Matschie, S.B. Ges. Nat. Fr. Berlin, 35. Eskischehir, Asia Minor. According to Szunyoghy, 1939, Ann. H.N. Mus. Hung. Zool. *32*, 106, this is the same as *anatolicus*.
1920. *Spalax monticola thermaicus* Hinton, Ann. Mag. N.H. *5:* 313. Neighbourhood of Salonica, Greece. Type from west bank Struma River, 12 miles south of Serres.
1920. *Spalax monticola corybantium* Hinton, Ann. Mag. N.H. *5:* 316. Murad Dagh, 15 miles north-east of Eushak, about 150 miles east of Smyrna, Asia Minor.
1920. *Spalax monticola captorum* Hinton, Ann. Mag. N.H. *5:* 318. Kanghri (Changria), Asia Minor.

All these names should be treated as either subspecies or synonyms of the first-named *S. leucodon*.

Spalax ehrenbergi Nehring, 1898 — Palestine Mole Rat

Approximate distribution of species: Syria, Palestine, Egypt, Libya.

SPALAX EHRENBERGI EHRENBERGI Nehring, 1898 (for 1897)

1898. *Spalax ehrenbergi* Nehring, S.B. Ges. Nat. Fr. Berlin (for December, *1897*), 178, pl. 2. Jaffa, Palestine.
? 1898. *Spalax kirgisorum* Nehring, S.B. Ges. Nat. Fr. Berlin, 176, pl. 4. ?Northern Syria.
1898. *Spalax intermedius* Nehring, S.B. Ges. Nat. Fr. Berlin, 181. Syria.
1903. *Spalax berytensis* Miller, Proc. Biol. Soc. Washington, *16:* 162. Beyrout, Syria.

Range: many localities in Syria and Palestine. For continued use of the name *ehrenbergi*, see Bate, 1945, Ann. Mag. N.H. *12:* 146.

SPALAX EHRENBERGI AEGYPTIACUS Nehring, 1898

1898. *Spalax aegyptiacus* Nehring, S.B. Ges. Nat. Fr. Berlin (for *1897*), 180. Ramleh, near Alexandria, Egypt. Range: Lower Egypt to Cyrenaica in Libya. Possibly separable from typical race on account of some cranial details.

FAMILY MURIDAE

In the Palaearctic and Indian regions, as elsewhere, this family is the dominant family of mammals, in number of genera, species and races. Five subfamilies are represented in the region. American authors prefer to restrict the family to Murinae and immediate allies, and to refer the rest of the Palearctic groups to a family Cricetidae.

Subfamilies:
Cricetinae, page 620
Gerbillinae, page 630
Microtinae, page 652
Murinae, page 557
Myospalacinae, page 649

Subfamily Murinae

Genera: *Acomys*, page 615
Apodemus, page 563
Arvicanthis, page 578
Bandicota, page 616
Chiromyscus, page 613
Chiropodomys, page 559
Dacnomys, page 578
Diomys, page 613
Golunda, page 613
Hadromys, page 576
Hapalomys, page 558
Lemniscomys, page 576
Micromys, page 561
Millardia, page 577
Mus, page 602
Nesokia, page 619
Rattus, page 579
Tokudaia, page 558
Vandeleuria, page 560
Vernaya, page 558

For key to the genera of Murinae, so far as they are definable, see Ellerman, 1941, *Fam. Gen. Liv. Rodents, 2:* 60–74. In this work, a few genera were retained which subsequent research shows are not distinguishable. These are *Laomys* (=*Lyzomys*), *Mycteromys* and *Coelomys*, which seem to be not more than subgenera of *Mus; Apomys*, not distinguishable from *Rattus*, and "*Pyromys*", based on a single specimen which is a skull of *Millardia gleadowi* mixed with a skin of *Mus platythrix* subsp. Since this work was published, *Diomys*, then regarded as unidentifiable, has turned up in considerable quantities in Manipur, and is certainly valid; see Ellerman, 1946, *Ann. Mag. N.H. 13:* 204 (published 1947). Sixteen of the above twenty genera occur in India; all species are reviewed in Ellerman, 1947, *J. Mamm. 28:* 362–387. Of the others, so far as the present region is concerned, *Lemniscomys* is only North-West African, *Arvicanthis* only from Egypt and Arabia. Only one other genus reaches mainland Asia, so far as known: *Pithecheir*, which occurs in the Malay States. The two other genera listed above, *Vernaya* and *Tokudaia*, are not represented in London, and I do not know their exact status. Both have the posterointernal cusp in the first and second upper molars. Anthony, in founding the genus *Vernaya*, shows that it is distinct from *Chiropodomys* and *Vandeleuria* (and makes some errors in his table regarding the dental characters of *Vandeleuria*), but does not distinguish it from *Apodemus* and *Micromys*. It has a much longer tail than either (from G. Allen's measurements), and a larger skull apparently than *Micromys*, and I suppose it cannot be allocated to any of the longer-standing genera. For a figure of the skull of *Tokudaia* see Tokuda, 1941, *Trans. Biogeog. Soc. Japan, 4:* 94.

Genus **VERNAYA** Anthony, 1941

1941. *Vernaya* Anthony, Field Mus. Publ. Zool. *27:* 110 (8 December). *Chiropodomys fulvus* G. Allen.
1941. *Octopodomys* Sody, Treubia, *18*, 2: 261. *Chiropodomys fulvus* Allen.

1 species: *Vernaya fulva*, page 558

Vernaya fulva G. Allen, 1927 Vernay's Climbing Mouse

Approximate distribution of species: Yunnan, Northern Burma.

VERNAYA FULVA G. Allen, 1927

1927. *Chiropodomys fulvus* G. Allen, Amer. Mus. Nov. 270, 11. Yinpankai, Mekong River, Yunnan, China.
1940. *Vandeleuria dumeticola* G. Allen, Mamm. China & Mongolia, *2:* 1048. Not of Hodgson, 1845. Range as above.

Genus **TOKUDAIA** Kuroda, 1943

1941. *Acanthomys* Tokuda, Trans. Biogeog. Soc. Japan, *4:* 93. *Rattus jerdoni osimensis* Abe. Not of Lesson, 1842.
1943. *Tokudaia* Kuroda, Bull. Biogeog. Soc. Japan, *13*, 9: 61. To replace *Acanthomys* Tokuda, preoccupied.
1946. *Tokudamys* Johnson, Proc. Biol. Soc. Washington, *59:* 169. To replace *Acanthomys* Tokuda, preoccupied.

1 species: *Tokudaia osimensis*, page 558

Tokudaia osimensis Abe, 1934

Approximate distribution of species: Liukiu Islands.

TOKUDAIA OSIMENSIS OSIMENSIS Abe, 1934

1934. *Rattus jerdoni osimensis* Abe, J. Sci. Hiroshima Univ. *3:* 107. Sumiyô-mura, Amami-Oshima Island, Liukiu Islands.

TOKUDAIA OSIMENSIS MUENNINKI Johnson, 1946

1946. *Tokudamys osimensis muenninki* Johnson, Proc. Biol. Soc. Washington, *59:* 170. Hentona, North Okinawa Island, Liukiu Islands.

Genus **HAPALOMYS** Blyth, 1859

1859. *Hapalomys* Blyth, J. Asiat. Soc. Bengal, *28:* 296. *Hapalomys longicaudatus* Blyth.

1 species: *Hapalomys longicaudatus*, page 559

In my opinion, there is only one species in this genus. The Hainan form is somewhat dubious, being based on skins only. The Indo-Chinese form is smaller in size than the typical race, and has smaller bullae and shorter teeth.

Hapalomys longicaudatus Blyth, 1859 Marmoset Mouse

Approximate distribution of species: Malay States, Siam, Indo-China, Tenasserim, Hainan.

Hapalomys longicaudatus longicaudatus Blyth, 1859

1859. *Hapalomys longicaudatus* Blyth, J. Asiat. Soc. Bengal, *28:* 296. Sitang River, Tenasserim. Range: Malay Peninsula (Chasen); specimens examined from Tenasserim and South-Western Siam.

Hapalomys longicaudatus delacouri, Thomas, 1927

1927. *Hapalomys delacouri* Thomas, P.Z.S. 55. Dakto, Annam, Indo-China.
(?) 1927. *Hapalomys pasquieri* Thomas, P.Z.S. 57. Xieng Khouang, Laos, Indo-China. (Based on a young specimen.)

Hapalomys longicaudatus marmosa G. Allen, 1927

1927. *Hapalomys marmosa* G. Allen, Amer. Mus. Nov. 270, 12. Near Nodoa, Island of Hainan.

Genus **CHIROPODOMYS** Peters, 1868

1868. *Chiropodomys* Peters, Mber. Preuss. Akad. Wiss. 448. *Chiropodomys penicillatus* Peters = *Mus gliroides* Blyth.
1934. *Insulaemus* Taylor, Philippine Land Mamm. 469. *Insulaemus calamianensis* Taylor.

1 species in the area covered by this list:
Chiropodomys gliroides, page 559

Only one species occurs in the present region. At least two other valid species of this genus occur in Borneo.

Chiropodomys gliroides Blyth, 1856 Pencil-tailed Tree Mouse

Approximate distribution of species: Assam, Burma, Tenasserim, Kwangsi in Southern China (G. Allen), Indo-China, Siam, Malay States, Sumatra, Natunas and (in my opinion) also Java and Borneo.

Chiropodomys gliroides gliroides Blyth, 1856

1856. *Mus gliroides* Blyth, J. Asiat. Soc. Bengal, *24*: 721. Cherrapunji, Khasi Hills, Assam.
1859. *Mus peguensis* Blyth, J. Asiat. Soc. Bengal, *28:* 295. Schwegyin, Southern Burma. (Not apparently distinguishable with certainty from the typical race.)
1868. *Chiropodomys penicillatus* Peters, Mber. Preuss. Akad. Wiss. Berlin, 448. Locality unknown.

Range: specimens examined from Assam, Northern Burma, Tenasserim, Annam (in Indo-China), South-Western Siam and Pahang in Malay States. Recorded also from Kwangsi, Southern China (G. Allen), and Sumatra and Bunguran Island, Natunas (*peguensis:* Chasen, 1940).

Genus **VANDELEURIA** Gray, 1842

1842. *Vandeleuria* Gray, Ann. Mag. N.H. *10:* 265. *Mus oleraceus* Bennett.

1 species: *Vandeleuria oleracea*, page 560

Vandeleuria oleracea Bennett, 1832 — Palm Mouse; Indian Long-tailed Tree Mouse

Approximate distribution of species: Ceylon, Peninsular India northwards to Orissa, and Kathiawar; Kumaon, Nepal, Assam, Burma, Indo-China, Siam. G. Allen says it has been recorded from Yunnan.

VANDELEURIA OLERACEA OLERACEA Bennett, 1832

1832. *Mus oleraceus* Bennett, P.Z.S. 121. Deccan ("Dukhun"), India.
1914. *Vandeleuria wroughtoni* Ryley, J. Bombay N.H.Soc. *22:* 658. Patal, Surat district, India.

Range: United Provinces, Central India, Gwalior, Kathiawar, Bihar, Nimar, Bombay (in part), south roughly to Dharwar.

(Probably not Yunnan as listed by G. Allen (1940, 1050). The specimen the measurements of which are quoted is nearer *dumeticola* on morphological grounds (very long tail), and on geographic grounds.)

VANDELEURIA OLERACEA DUMETICOLA Hodgson, 1845

1845. *Mus dumeticola* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
1841. *Mus dumecolus* Hodgson, J. Asiat. Soc. Bengal, *10:* 915, *nom. nud.*
1845. *Mus povensis* Hodgson, Ann. Mag. N.H. *15:* 269. Nepal.
(?) 1859. *Mus badius* Blyth, J. Asiat. Soc. Bengal, *28:* 295. Tenasserim Province.
1915. *Vandeleuria oleracea marica* Thomas, J. Bombay N.H. Soc. *24:* 54. Koira, Chaibassa, Orissa, 800 ft., India

Range: Orissa, Nepal, Sikkim, Bhutan Duars, North Kamrup, Jaintia and Naga Hills, etc. in Assam, Manipur, Western Burma, north to about 27° N. (Nmai Valley), perhaps east into Yunnan, and south to Toungoo district and Mt. Popa in Eastern Burma.

VANDELEURIA OLERACEA NILAGIRICA Jerdon, 1867

1867. *Mus nilagiricus* Jerdon, Mamm. India, 203. Ootacamund, Southern India.

Range: Ceylon (part); Coorg, Konkan, Eastern Ghats, Nilgiri Hills, etc. in Southern India.

VANDELEURIA OLERACEA SPADICEA Ryley, 1914

1914. *Vandeleuria oleracea spadicea* Ryley, J. Bombay N.H. Soc. *22:* 659. Lunwa, Palanpur, Gujerat, India.

VANDELEURIA OLERACEA RUBIDA Thomas, 1914

1914. *Vandeleuria rubida* Thomas, J. Bombay N.H. Soc. *23:* 202. Bageswar, Kumaon, 3,200 ft., Northern India.

Vandeleuria oleracea modesta Thomas, 1914

1914. *Vandeleuria oleracea modesta* Thomas, J. Bombay N.H. Soc. *23:* 202. Ramnagar, Kumaon, 1,100 ft., Northern India.

Vandeleuria oleracea sibylla Thomas, 1914

1914. *Vandeleuria sibylla* Thomas, J. Bombay N.H. Soc. *23:* 202. Chantabun, Siam.

Vandeleuria oleracea nolthenii Phillips, 1929

1929. *Vandeleuria nilagirica nolthenii* Phillips, Ceylon J. Sci. Sec. B. *15:* 165. West Haputale, Ohiya, 6,000 ft., Ceylon.

Vandeleuria oleracea scandens Osgood, 1932

1932. *Vandeleuria dumeticola scandens* Osgood, Field Mus. Pub. Zool. *18:* 320. Muong Boum, Tonkin, Northern Indo-China.

Genus **MICROMYS** Dehne, 1841

1841. *Micromys* Dehne, *Micromys agilis*, ein neues Säugethier der Fauna von Dresden, 1. *Micromys agilis* Dehne = *Mus soricinus* Hermann.

1 species: *Micromys minutus*, page 561

Micromys minutus Pallas, 1771 Harvest Mouse

Approximate distribution of species: England, France, Belgium, Italy, Switzerland, Germany, Holland, Denmark, Hungary, Yugoslavia, Rumania; Poland, Russia as far north as South Karelia, Vologda and Kirov Provinces, Northern Kazakstan, Southern Siberia and the Far East, as far north as River Konda, Naruim region, and Central Yakutia (Kuznetzov); evidently southwards to Black Sea coast and nearly to region of Northern Caucasus, east to Ussuri; Finland. Japan, Korea, China from states of Szechuan, Shensi, Yunnan, Fukien, etc. Formosa. Northern Assam, Northern Burma, Northern Indo-China.

There seem to be far too many standing subspecific names in this species. Material available indicates that it is extremely difficult to define any subspecies. Tropical Asiatic forms (*erythrotis*) have the tail long; European and Japanese-Eastern Siberian forms (*soricinus*, etc.) have the tail shorter, and that is about all that can be done. The typical race is not represented in London.

Micromys minutus minutus Pallas, 1771

1771. *Mus minutus* Pallas, Reise. Russ. Reichs. *1:* 454. Simbirsk (p. 130), banks of the Volga, Russia.

(?) 1792. *Mus minutus flavus* Kerr, Anim. Kingd. 232. Siberia.

1899. *Mus minutus typicus* Barrett-Hamilton, Ann. Mag. N.H. *3:* 343.

1911. *Mus minutus sareptae* Hilzheimer, Acta Soc. Faun. et Flora Fenn. *34:* 18. Sarepta, Lower Volga, Russia.

Range: Russia, Western Siberia, Northern Kazakstan.

MICROMYS MINUTUS SORICINUS Hermann, 1780

1780. *Mus soricinus* Hermann, Schreb. Säugeth. *4:* 661. Strasbourg, Bas-Rhin, Eastern France.
1785. *Mus triticeus* Boddaert, Elench Anim. *1:* 111. Hampshire, England.
1789. *Mus minimus* White, Nat. Hist. & Antiq. Selborne, 43. Selborne, Hampshire, England.
1792. *Mus messorius* Kerr, Anim. Kingd. 230. Hampshire, England.
1794. "*Mus avenarius* Wolf, Versuche die Feldmäuse zu vertilgen, 16, 315" Hermann, *1804*, Observ. Zool. 61. No locality.
1804. *Mus pendulinus* Hermann, Observ. Zool. 61. Strasbourg.
1804. *Mus parvulus* Hermann, *loc. cit.* 62. Strasbourg.
?) 1816. *Mus arvensis* Leach, Syst. Cat. Indig. Mamm. & Birds B.M. 7, *nom. nud.*
1822. *Mus campestris* Desmarest, Mamm. 543. France.
1840. *Mus minatus* Schinz, Europ. Fauna, *1:* 70.
1841. *Micromys agilis* Dehne, *Micromys agilis*, ein neues Säugt. der Fauna von Dresden, 1. Dresden, Germany.
1841. *Mus oryzivorus* de Sélys-Longchamps, Atti della sec. Riun. degli Sci. Ital. Torino, 247. Lombardy, Italy.
1842. *Mus pumilus* F. Cuvier, H. N. Mamm. Tabl. Gén. et Méth. fasc. 32, 4. Vicinity of Paris, France.
1844. *Mus meridionalis* Costa, Ann. Accad. Aspir. Nat. *2:* 33. Vicinity of Naples, Italy.

Range: England, France, Belgium, Germany, Switzerland, Italy, etc.

MICROMYS MINUTUS PRATENSIS Ockskay, 1831

1831. *Mus pratensis* Ockskay, Nov. Act. Acad. Caes. Nat. Cur. *15*, 2: 243. Western Hungary.
1882. *Mus arundinaceus* Petenyi, Termeszetrajzi Füzetek, *5:* 142.

Range: Hungary, Yugoslavia, Rumania.

MICROMYS MINUTUS ERYTHROTIS Blyth, 1855

1855. *Mus erythrotis* Blyth, J. Asiat. Soc. Bengal, *24:* 721. Cherrapunji, Khasi Hills, Assam.
1874. *Mus pygmaeus* Milne-Edwards, Rech. Mamm. 291. Moupin, Szechuan, China.
1929. *Micromys minutus berezowskii* Argyropulo, C.R. Acad. Sci. Leningrad, 1929A, 253. Mountain defile Hotszihow, vicinity of Lunganfu, Northern Szechuan, China.

Range: Northern Indo-China (Tonkin), Northern Burma, Assam, states of Fukien, Hupeh, Szechuan, Yunnan and Shensi, China.

MICROMYS MINUTUS USSURICUS Barrett-Hamilton, 1899

1899. *Mus minutus ussuricus* Barrett-Hamilton, Ann. Mag. N.H. *3:* 341. Ussuri region, South-Eastern Siberia. Range: Ussuri region, Korea; Manchuria (Kuznetzov).

MICROMYS MINUTUS JAPONICUS Thomas, 1906

1906. *Micromys minutus japonicus* Thomas, P.Z.S. *1905*, *2:* 351. Tosa, Kochi Ken, Shikoku, Japan. Range: Kiushiu, Shikoku, Japan.

Micromys minutus batarovi Kastschenko, 1910
1910. *Mus minutus batarovi* Kastschenko, Ann. Mus. Zool. Ac. Sci. St. Pétersb. *15:* 284. Near Irkutsk, Lake Baikal.
(?) 1910. *Mus minutus kytmanovi* Kastschenko, Ann. Mus. Zool. Ac. Sci. St. Pétersb. *15:* 284. Transbaikalia.
Range: Transbaikalia, Lake Baikal region, Sayan Mountains, probably Southern Yakutia, in Eastern Siberia.

Micromys minutus fenniae Hilzheimer, 1911
1911. *Mus minutus fenniae* Hilzheimer, Acta Soc. Faun. et Flora Fenn. *34:* 15. Mantsala, Finland.

Micromys minutus aokii Kuroda, 1922
1922. *Micromys minutus aokii* Kuroda, J. Mamm. *3:* 43. Near Izugahara, Tsushima, Japan.

Micromys minutus mehelyi Bolkay, 1925
1925. *Micromys minutus mehelyi* Bolkay, Nov. Mus. Sarajevoensis, *1:* 12. Bosnia, Yugoslavia.

Micromys minutus brauneri Martino, 1930
1930. *Micromys minutus brauneri* Martino, Zapiski Russ. Sci. Inst. Belgrade, *2:* 60. Kraljevo, Serbia, Yugoslavia.

Micromys minutus hondonis Kuroda, 1933
1933. *Micromys minutus hondonis* Kuroda, J. Mamm. *14:* 243. Kashiya, Kannami-mura, Tagatagori, Province Izu, Hondo, Japan.

Micromys minutus subobscurus Fritsche, 1934
1934. *Micromys minutus subobscurus* Fritsche, Z. Säuget. *9:* 431. Neighbourhood of Wesermünde, Germany.

Micromys minutus takasagoensis Tokuda, 1941
1941. *Micromys minutus takasagoensis* Tokuda, Biogeo. Tokyo, *4*, I: 78. (*N.V.*) Sikayau, Formosa.

Genus **APODEMUS** Kaup, 1829

1829. *Apodemus* Kaup, Skizz. Europ. Thierwelt, *1:* 154. *Mus agrarius* Pallas.
1924. *Sylvaemus* Ognev, Faun. Vert. Gouv. Voronesh, 143. *Mus sylvaticus* Linnaeus.
1924. *Nemomys* Thomas, J. Bombay N.H. Soc. *29*, 4: 889. *Mus sylvaticus* Linnaeus.
1928. *Alsomys* Dukelski, Zool. Anz. *77:* 42. *Mus sylvaticus major* Radde = *Apodemus praetor* Miller.
1934. *Petromys* Martino, Zap. Russk. *10:* 85. *Sylvaemus mystacinus epimelas* Nehring. Not *Petromys* Smith, 1834 (the South African Dassie-Rat, a member of the family Octodontidae).

5 species: *Apodemus agrarius*, page 574 *Apodemus speciosus*, page 565
Apodemus flavicollis, page 565 *Apodemus sylvaticus*, page 568
Apodemus mystacinus, page 564

I have examined more than 1,500 specimens of this genus representing nearly all the named forms. The characters given to distinguish the various species are excessively hard to define.

Characters given by Russian authors may hold good for specimens from the U.S.S.R., but certainly do not do so when all forms are examined. In particular, the absence or presence of supraorbital ridges in the skull, which I thought formerly was a valid character, proves to be highly variable individually in many instances. It seems that Glover Allen is nearest the correct classification for the eastern forms in his work on the mammals of China and Mongolia, except that I have come to the conclusion that two of four species he retains, *latronum* and *peninsulae*, are conspecific and may be regarded as eastern subspecies of *flavicollis*. See Ellerman, 1949, *Fam. Gen. Liv. Rodents, 3:* 28–35, where the genus is relisted in some detail. The present list is based on results noted in that work. I follow Allen in restricting the name *speciosus* to the very large Japanese races only. In Europe, besides the distinct, striped *A. agrarius*, three species occur together in the Balkan States, *sylvaticus*, *flavicollis* and *mystacinus*, differing in average size of skull. *A. mystacinus* is as large as *speciosus*, but differs in its longer tail and one or two cranial details. In China, where the mid-dorsal stripe in *A. agrarius* can disappear, it is distinguishable by the dental character pointed out by G. Allen, 1940, *Mamm. China & Mongolia, 2:* 940. This character holds good throughout Asia. The majority of the forms I distribute in a somewhat arbitrary manner between *sylvaticus*, average smaller skull, and *flavicollis*, average larger skull; occurring together nearly throughout the Palaearctic. I feel fairly sure there are some errors of judgment in my arrangement, and equally sure that there is no other way to define species in this very large and difficult group.

Apodemus mystacinus Danford & Alston, 1877 Broad-toothed Field Mouse

Approximate distribution of species: Yugoslavia, Greece, Asia Minor, and Palestine (G. Allen).

Apodemus mystacinus mystacinus Danford & Alston, 1877

1877. *Mus mystacinus* Danford & Alston, P.Z.S. 279. Zebil, Bulgar Dagh, Asia Minor.

1903. *Mus mystacinus smyrnensis* Thomas, Ann. Mag. N.H. *12:* 188. Smyrna, Western Asia Minor.

? 1914. *Apodemus mystacinus rhodius* Festa, Bol. Mus. Zool. Anat. Comp. Torino, *29:* 10. Aghios Isidoros, Rhodes Island, Eastern Mediterranean.

Range: Asia Minor, except northeastern coastal parts.

Apodimus mystacinus epimelas Nehring, 1902

1902. *Mus epimelas* Nehring, S.B. Ges. Nat. Fr. Berlin, 2. Agoriani, Parnassus, Greece. Range: Greece, Yugoslavia, Albania.

Apodimus mystacinus euxinus G. Allen, 1915

1915. *Apodemus mystacinus euxinus* G. Allen, Bull. Mus. Comp. Zool. Harvard, *59:* 11. Scalita, Northern Asia Minor. Range: coastal parts of north-eastern Asia Minor.

Apodemus speciosus Temminck, 1845 Large Japanese Field Mouse

Approximate distribution of species, as here understood: Japan.

Apodemus speciosus speciosus Temminck, 1845

1845. *Mus speciosus* Temminck, Fauna Japonica, Mamm. 52. Japan. Range: Hondo, Kiushiu, Shikoku, Tsushima, etc., in Japan.

Apodemus speciosus ainu Thomas, 1906

1906. *Micromys speciosus ainu* Thomas, P.Z.S. *1905, 2:* 349. Aoyama, Hokkaido, Japan. Ranges to S. Kurile Is.

Apodemus speciosus navigator Thomas, 1906

1906. *Micromys speciosus navigator* Thomas, P.Z.S. *1905, 2:* 358. Interior of Dogo Island, Oki Islands, Japan.

Apodemus speciosus dorsalis Kuroda, 1924

1924. *Apodemus speciosus dorsalis* Kuroda, New Mamm. from Riukiu Islands, Tokyo, 9. Miyanoura, Yakushima Island, Japan. Tokuda (1941) makes this a synonym of *speciosus*.

Apodemus speciosus insperatus Kuroda, 1938

1938. *Apodemus speciosus insperatus* Kuroda, List. Jap. Mamm. Tokyo, 113. Osima, Izu, Japan.

Apodemus speciosus tusimaensis Tokuda, 1941

1941. *Apodemus speciosus* var. *tusimaensis* Tokuda, Biogeogr. Tokyo, *4*, 1: 89. Izuhara, Tsushima, off Japan.

Apodemus speciosus sadoensis Tokuda, 1941

1941. *Apodemus speciosus* var. *sadoensis* Tokuda, Annot. Zool. Jap. 14, 237. (*N.V.*) Sado Island, Japan.

Apodemus flavicollis Melchior, 1834 Yellow-necked Field Mouse

Approximate distribution of species, as here understood: England, Shetland Islands, Hebrides in part, France, Switzerland, Norway, Sweden, Germany, Denmark, Holland, Hungary, Austria, Yugoslavia, Rumania, Greece, Finland, Estonia, Sardinia, Poland, Russia (Leningrad Province to Southern Urals, Northern Caucasus, etc.), Altai Mountains, Transbaikalia to Ussuri (north to Lower Lena), Korea, Manchuria; Chihli, Shensi and Shansi, Kansu, Szechuan and Yunnan in China, South-Eastern Tibet, Northern Burma, Nepal, Punjab, Kumaon, Kashmir; Afghanistan, Syria, Palestine, Asia Minor.

This species is like *Apodemus sylvaticus* and occurs with it extensively, but the skull is always larger on average.

APODEMUS FLAVICOLLIS FLAVICOLLIS Melchior, 1834

1834. *Mus flavicollis* Melchior, Danske Staats og Norges Pattedyr, 99. Sielland, Denmark.

1866. *Mus cellarius* Fischer, Zool. Gart. *7:* 153. Near Luga, St. Petersburg, Russia.

1900. *Mus sylvaticus typicus* Barrett-Hamilton, P.Z.S. 404. Not *Mus sylvaticus* Linnaeus, 1758

1900. *Mus sylvaticus princeps* Barrett-Hamilton, P.Z.S. 408. Bustenari, Carpathians north-west of Bucharest, 480 m., Rumania.

Range: Russia (in part; White Russia, Leningrad, Kalinin and Smolensk Provinces, and Western Ukraine), Finland, Estonia, Greece, Albania, Rumania, Yugoslavia, Austria, Hungary, Switzerland, Germany, Denmark, Holland, France, Channel Islands, Sardinia, Sweden, Norway.

APODEMUS FLAVICOLLIS HIRTENSIS Barrett-Hamilton, 1899

1899. *Mus hirtensis* Barrett-Hamilton, P.Z.S. 81. Island of St. Kilda, Outer Hebrides.

APODEMUS FLAVICOLLIS WINTONI Barrett-Hamilton, 1900

1900. *Mus sylvaticus wintoni* Barrett-Hamilton, P.Z.S. 406. Graftonbury, Herefordshire, England.

APODEMUS FLAVICOLLIS FRIDARIENSIS Kinnear, 1906

1906. *Mus sylvaticus fridariensis* Kinnear, Ann. Scottish N.H. *15:* 68. Fair Isle, Shetland Islands.

APODEMUS FLAVICOLLIS PENINSULAE Thomas, 1906

? 1862. *Mus sylvaticus* var. *major* Radde, Reise. Sib. *1:* 180. Bureja Mountains, Amur Province, Eastern Siberia. Not of Brants, 1827 (Muizen, 105); nor of Pallas, 1779.

1906. *Micromys speciosus peninsulae* Thomas, P.Z.S. 862. Mingyong, 110 miles south-east of Seoul, Korea.

1914. *Apodemus praetor* Miller, Proc. Biol. Soc. Washington, *27:* 89. Sungaree River, 60 miles south-west of Kirin, Kirin Province, Manchuria.

?) 1928. *Mus (Alsomys) major rufulus* Dukelski, Zool. Anz. *77:* 44. Seventy-five versts south-west of Vladivostock, Ussuri, Eastern Siberia.

Range: if Kuroda is correct in regarding *praetor* as a synonym of *peninsulae*, the range will be Korea, Manchuria, China from states of Kansu, Shensi and Shansi, Szechuan, Chihli, and Yunnan in part, also Eastern Siberia, regions of Amur, Transbaikalia, Ussuri. Russian authors use the name *major* of Radde which appears to be twice preoccupied. If, as seems probable, two species, one smaller, one larger, occur together in Transbaikalia or Eastern Siberia, their correct names would seem to be *A. flavicollis peninsulae* (the larger), and *A. sylvaticus majusculus* Turov, 1924 (the smaller).

APODEMUS FLAVICOLLIS WARDI Wroughton, 1908

1908. *Micromys sylvaticus wardi* Wroughton, J. Bombay N.H. Soc. *18:* 282. Saspul, Ladak. Range: several places in Kashmir, but not occurring with *A. f. ravus*. A similar form occurs in Afghanistan (specimens in B.M.).

Apodemus flavicollis latronum Thomas, 1911

1911. *Apodemus speciosus latronum* Thomas, Abstr. P.Z.S. 49 and P.Z.S. *1912:* 137. Tatsienlu, Western Szechuan, China. Range: Yunnan and Szechuan, China; Upper Burma; a similar form occurs in South-Eastern Tibet (specimens in B.M.).

Apodemus flavicollis fennicus Hilzheimer, 1911

1911. *Mus sylvaticus fennicus* Hilzheimer, Acta Soc. Faun. et Flora Fenn. *34:* 9. Kirchspeil Sääksmäki, north of Tavastehus, Finland. Status *fide* Vinogradov and Argyropulo.

Apodemus flavicollis rusiges Miller, 1913

1913. *Apodemus flavicollis rusiges* Miller, Proc. Biol. Soc. Washington, *26:* 81. Central Kashmir. Replaces:

1894. *Mus arianus griseus* True, Proc. U.S. Nat. Mus. *17:* 8. Not of Mina Palumbo, 1868.

Range: Kashmir, part, Punjab and Kumaon.

Apodemus flavicollis nigritalus Hollister, 1913

1913. *Apodemus nigritalus* Hollister, Smiths. Misc. Coll. *60*, 24: 1. Tapucha, Altai Mountains, Siberia. Hollister definitely states that there are two species, a larger and a smaller, occurring together in the Altai. *A. sylvaticus tscherga* is apparently based on the small form, the present name on the large one. (Kuznetzov seems to use *tscherga* for the larger one, which seems incorrect from descriptions.)

Apodemus flavicollis hamiltoni Hinton, 1914

1914. *Apodemus hebridensis hamiltoni* Hinton, Ann. Mag. N.H. *14:* 126. Island of Rhum, Inner Hebrides.

Apodemus flavicollis granti Hinton, 1914

1914. *Apodemus fridariensis grantii* Hinton, Ann. Mag. N.H. *14:* 132. Mid Yell, Shetland Islands.

Apodemus flavicollis thuleo Hinton, 1919

1919. *Apodemus fridariensis thuleo* Hinton, Scot. Nat. 178. Foula, Shetland Islands.

Apodemus flavicollis samariensis Ognev, 1923

1923. *Apodemus flavicollis samariensis* Ognev, Biol. Mitt. Timiriazeff, 1: 107. Samara (former Buzuluk division), Eastern Russia. Range: Volga, Voronej and Tambov Provinces, and Ciscaucasia.

Apodemus flavicollis gurkha Thomas, 1924

1924. *Apodemus gurkha* Thomas, J. Bombay N.H. Soc. *29*, 4: 888. Laprak, Gorkha, about 11,500 ft., Nepal.

Apodemus flavicollis brauneri Martino, 1926

1926. *Apodemus flavicollis brauneri* Martino, Ann. Mus. Budapest, *23*: 166. Topcider, near Belgrade, Serbia, Yugoslavia.

Apodemus ? flavicollis pohlei Aharoni, 1932

1932. *Apodemus (Sylvaemus) flavicollis pohlei* Aharoni, Z. Sauget. *7:* 183. Kafrun in Nussarijeh Mountain, north-east of Lebanon, Syria. Position provisional; Neuhauser (1936) made this a synonym of *Apodemus mystacinus*. Whereas it is very reminiscent of that, specimens I have seen lack the unusually wide upper molars which are characteristic of *mystacinus*. Range: to Palestine.

Apodemus flavicollis ponticus Sviridenko, 1936

1936. *Sylvaemus flavicollis ponticus* Sviridenko, Abstr. Works Zool. Inst. Moscow St. Univ. *3:* 103. Olgino Village, Chernomorski district, Black Sea (Caucasus), Russia.

1936. *Sylvaemus flavicollis ponticus* natio *brevicauda* Sviridenko, *loc. cit.* 105. Maikop State Forest, Russia.

Apodemus flavicollis saturatus Neuhauser, 1936

1936. *Apodemus flavicollis saturatus* Neuhäuser, Z. Säuget. *11:* 167, 184. Vilayet Riza, Northern Asia Minor.

Apodemus flavicollis argyropuloi *nom. nov.*

1941. *Apodemus flavicollis parvus* Vinogradov & Argyropulo, Fauna U.S.S.R., new ser. *29:* 163. Delizhan, Armenia. Not of Bechstein, 1796.

(The last three named forms are not represented in London.)

Apodemus sylvaticus Linnaeus, 1758 Common Field Mouse

Approximate distribution of species: Britain, Hebrides, Ireland, Iceland, France, Belgium, Holland, Spain, Portugal, Italy, Sicily, Corsica, Switzerland, Norway, Sweden, Germany, Hungary, Czechoslovakia, Yugoslavia, Rumania, Greece, Crete, Poland, Russia from Caucasus northwards except the extreme north, Russian Turkestan, Altai, Sakhalin, Transbaikalia, Chinese Turkestan, Japan, Korea, Formosa, China from states of Fukien, Yunnan, Szechuan, Shensi, Chihli, Kansu, Hupeh, etc.; Northern Assam, Northern Burma, Punjab; Asia Minor, Persia, Palestine; Morocco, Algeria, Tunis.

Apodemus sylvaticus sylvaticus Linnaeus, 1758

1758. *Mus sylvaticus* Linnaeus, Syst. Nat. 10th ed. *1:* 62. Upsala, Sweden.

1796. *Mus sylvaticus parvus* Bechstein, Getreue Abbild. Naturh. Gegenstände, *1:* 100. Thuringia, Germany.

1796. *Mus sylvaticus candidus* Bechstein, *loc. cit.* Thuringia.

1796. *Mus sylvaticus varius* Bechstein, *loc. cit.* Thuringia.

1796. *Mus sylvaticus niger* Bechstein, *loc. cit.* Thuringia.

1796. *Mus sylvaticus leucocephalus* Bechstein, *loc. cit.* 101. Thuringia.

1801. *Mus sylvaticus albus* Bechstein, Gemeinn Nat. Deutschlands, 2nd ed. *1:* 965. Thuringia, Germany.

1839. *Mus intermedius* Bellamy, N.H. South Devon, 330. Devonshire, England.
1900. *Mus sylvaticus celticus* Barrett-Hamilton, P.Z.S. 401. Caragh Lake, Co. Kerry, Ireland.
1921. *Mus (Mus) sylvaticus bergensis* Krausse, Arch. Nat. Berlin, *87*, 6: 41. Bergen, Norway.

Other probable synonyms include:

1911. *Mus sylvaticus flavobrunneus* Hilzheimer, Acta Soc. Fauna et Flora Fenn. *34:* 7. Obertürkheim, near Stuttgart, Southern Germany.
1921. *Mus sylvaticus alpinus* Burg, Der Weidmann Bülach, 2, 7. Munstertal, Switzerland. (*N.V.*)
(?) 1925. *Mus sylvaticus maximus* Burg, Pallasia, Dresden, *3*, 1: 70. Bergell, Switzerland. (*N.V.*)
1934. *Apodemus sylvaticus spadix* Fritsche, Z. Säuget. *9:* 435. Wedhausen, near Sonneburg, Thuringia, Germany.

Range: Northern European range of species, from Ireland eastward at least to Germany and Rumania, and from Southern Scandinavia to Southern France, Northern Italy, Yugoslavia.

Apodemus sylvaticus uralensis Pallas, 1811

1811. *Mus sylvaticus* var. *uralensis* Pallas, Zoogr. Ross. As. *1:* 168. Southern Ural Mountains. Range: Southern Urals to Northern Kazakstan; Kuznetzov thinks the Western Siberian and Altai form may be the same, in which case *tscherga* would probably be a synonym.

Apodemus sylvaticus dichrurus Rafinesque, 1814

1814. *Musculus dichrurus* Rafinesque, Précis des Découverts Somiologiques, 13. Sicily.
1844. *Mus pecchioli* Pecchioli, Atti della quinta Unione degli Sci. Italiani, Torino, 426. Tuscany, probably near Siena, Italy.
(?) 1868. (*Mus sylvaticus*) var. *griseus* Mina Palumbo, Ann. Agric. Sicil. *12:* 71. Sicily. (*N.V.*) See Miller, 1913, Proc. Biol. Soc. Washington, *26:* 81.
(?) 1868. (*Mus sylvaticus*) var. *isabellinus* Mina Palumbo, *loc. cit.* (*N.V.*)

Range: Mediterranean region from Balkans and Greece to Central and Southern Spain.

Apodemus sylvaticus islandicus Thienemann, 1824

1824. *Mus islandicus* Thienemann, Reise Nord. Europ. *1:* 153. Iceland.
(?) 1939. *Apodemus sylvaticus grandiculus* Degerbol, in Saemundsson & Degerbol, Zool. Iceland, *4*, 76: 39. Iceland.

Degerbol came to the conclusion that *islandicus* Thienemann was based on *Mus musculus*, and proposed *grandiculus* as the name for the Icelandic form, which Miller, 1912, regarded as a synonym of the typical race. Schwarz & Schwarz, 1943, *J. Mamm. 24:* 65, also list *islandicus* in *Mus musculus*, as a synonym of *M. m. domesticus*, Rutty, 1772. But B.M. specimen 45.11.15.17 (Thienemann collector) skull, labelled *islandicus*, is *Apodemus sylvaticus*.

Apodemus sylvaticus hayi Waterhouse, 1837

1838. *Mus hayi* Waterhouse, P.Z.S. 1837: 76. Morocco.

Apodemus sylvaticus argenteus Temminck, 1845

1845. *Mus argenteus* Temminck, Fauna Jap., Mamm. 51. Japan.

(?) 1905. *Micromys geisha* Thomas, Ann. Mag. N.H. *15:* 491. Kobe, Hondo, Japan.

It seems fairly certain that Temminck would be acquainted with such a common form as that later described as *geisha* by Thomas. There is reason to believe that the cranial measurements given for *argenteus* in the original description of *geisha* are erroneous. B.M. No. 88.9.25.7, which Barrett-Hamilton identified as *argenteus*, seems to be an ordinary specimen of *geisha* in such skull measurements as are obtainable, and the description of *argenteus* seems to fit *geisha* equally well.

1906. *Micromys geisha hokkaidi* Thomas, P.Z.S. *1905, 2:* 350. Noboribetsu, Hokkaido, Japan.

1906. *Micromys geisha yakui* Thomas, P.Z.S. *1905, 2:* 362. Mountains of C. Yakushima, south of Japan, 3,500 ft.

1924. *Apodemus geisha tanei* Kuroda, New Mamm. from Riukiu Islands, Tokyo, 9. Nishino-omote, Tanegashima Island, off Japan.

Range: as above, and including Shikoku and Kiushiu.

Apodemus sylvaticus algirus Pomel, 1856

1856. *Mus algirus* Pomel, C.R. Acad. Sci. Paris, *42:* 654. Oran Province, Algeria.

(?) 1857. *Mus chamaeropsis* Levaillant, Explor. Sci. de l'Algérie, Zool. Mamm. Atlas, pl. v, fig. 1. Constantine, Algeria.

For generic status of this form see G. Allen, 1939, *Checklist African Mammals*, 373.

Apodemus sylvaticus tokmak Severtzov, 1873

1873. *Mus tokmak* Severtzov, Mem. Soc. Amis. Sci. Moscow, *8:* 61, tab. Near Tokmak, Alexsandrov mountain ridge, Semirechyia district, Russian Central Asia. Range: Northern Kirghizia, Mountains of Alma-Ata Province.

Apodemus sylvaticus arianus Blanford, 1881

1881. *Mus arianus* Blanford, Ann. Mag. N.H. *7:* 162. Kohrud, Northern Persia. Replaces:

1875. *Mus erythronotus* Blanford, Ann. Mag. N.H. *16:* 311. Kohrud. Not of Temminck, 1845.

1902. *Mus sylvaticus witherbyi* Thomas, Ann. Mag. N.H. *10:* 490. Sheoul, Fars, Persia. A whitish-bellied race perhaps confined to Persia, although Kuznetzov lists it from Kopet-Dag Mountains, Russian Turkestan. (Type in B.M.)

Apodemus sylvaticus hebridensis de Winton, 1895

1895. *Mus hebridensis* de Winton, Zoologist, *19:* 369. Uig, Island of Lewis, Outer Hebrides.

Apodemus sylvaticus tscherga Kastschenko, 1899

1899. *Mus tscherga* Kastschenko, Res. Zool. Exp. to Altai, *1898*, 46. Cherga Village, Siberian Altai.

Kuznetzov (1944) lists this form as *A. speciosus*. In the present work, *speciosus* is restricted to Japan, and larger forms of *Apodemus* are referred to *A. flavicollis*. Hollister states that two species occur together in the Altai, one of which he calls *nigritalus* (here referred to *flavicollis*); and from the description of *tscherga* it seems fairly clear that the name was based on a small form referrable to *sylvaticus*. The range probably includes Zungaria and Chinese Turkestan; the British Museum possesses specimens from several localities in these countries which seem similar to our Altai specimens.

Apodemus sylvaticus tauricus Barrett-Hamilton, 1900

1900. *Mus sylvaticus tauricus* Barrett-Hamilton, P.Z.S. 412. Zebil, Bulgar Dagh, Asia Minor. Range: Asia Minor, Persia (part), to Palestine, and perhaps Transcaucasia.

Apodemus sylvaticus pallipes Barrett-Hamilton, 1900

1900. *Mus sylvaticus pallipes* Barrett-Hamilton, P.Z.S. 417. Surhad Wahkan, Pamir (Russian Turkestan). Range includes Southern Kirghizia, Pamir, Tadzhikistan, in mountains.

Apodemus sylvaticus draco Barrett-Hamilton, 1900

1900. *Mus sylvaticus draco* Barrett-Hamilton, P.Z.S. 418. Kuatun, Fukien, South-Eastern China.

1870. *Mus badius* Swinhoe (not of Blyth, 1859), and *Mus argenteus* Swinhoe (not of Temminck, 1845), P.Z.S. 637.

Range: Fukien, Szechuan in part, Shensi, Kansu, Chihli, to Korea.

Apodemus sylvaticus celatus Thomas, 1906

1906. *Micromys geisha celatus* Thomas, P.Z.S. *1905, 2:* 359. Interior of Dogo Island, 100 ft., Oki Islands, Japan.

Apodemus sylvaticus callipides Cabrera, 1907

1907. *Micromys sylvaticus callipides* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *7:* 228. Villarutis, la Coruña, Spain. Range: mountains of Pyrenees-Asturias chain, south into Portugal.

Apodemus sylvaticus giliacus Thomas, 1907

1907. *Micromys speciosus giliacus* Thomas, P.Z.S. 411. Dariné, Sakhalin Island. A form of *A. sylvaticus* as here understood; type and several other specimens in London.

Apodemus sylvaticus semotus Thomas, 1908

1908. *Apodemus semotus* Thomas, Ann. Mag. N.H. *1:* 447. Mt. Arizan, Formosa.

Apodemus sylvaticus sagax Thomas, 1908

1908. *Apodemus geisha sagax* Thomas, P.Z.S. 54. Izuhara Island, south of Tsushima, Japan.

Apodemus sylvaticus pentax Wroughton, 1908

1908. *Micromys sylvaticus pentax* Wroughton, J. Bombay N.H. Soc. *18:* 283. Thandiani, Punjab.

Apodemus sylvaticus creticus Miller, 1910

1910. *Apodemus sylvaticus creticus* Miller, Ann. Mag. N.H. *6:* 460. Katharo, Crete.

Apodemus sylvaticus orestes Thomas, 1911

1911. *Apodemus speciosus orestes* Thomas, Abstr. P.Z.S. 49 and P.Z.S. *1912:* 136. Mt. Omi Shan, Szechuan, China. Range: Szechuan, Hupeh, Yunnan, Northern Burma, Northern Assam (Mishmi).

Apodemus sylvaticus microtis Miller, 1912

1912. *Apodemus microtis* Miller, Proc. Biol. Soc. Washington, *25:* 60. Vicinity of Djarkent, Semirechyia, Eastern Russian Turkestan.

Apodemus sylvaticus mosquensis Ognev, 1913

1913. *Mus sylvaticus mosquensis* Ognev, Fauna Mosquensis, *1*, 1: 204. Moscow Province, Russia. Range: Central and Western Russia.

Apodemus sylvaticus butei Hinton, 1914

1914. *Apodemus sylvaticus butei* Hinton, Ann. Mag. N.H. *14:* 123. Mountstuart, Island of Bute, Hebrides.

Apodemus sylvaticus cumbrae Hinton, 1914

1914. *Apodemus hebridensis cumbrae* Hinton, Ann. Mag. N.H. *14:* 128. Great Cumbrae Island, Inner Hebrides.

Apodemus sylvaticus maclean Hinton, 1914

1914. *Apodemus hebridensis maclean* Hinton, Ann. Mag. N.H. *14:* 129. Tobermory, Mull, Inner Hebrides.

Apodemus sylvaticus fiolagan Hinton, 1914

1914. *Apodemus hebridensis fiolagan* Hinton, Ann. Mag. N.H. *14:* 131. Arran Island, Inner Hebrides.

Apodemus sylvaticus balchaschensis Kashkarov, 1922

1922. *Apodemus sylvaticus balchaschensis* Kashkarov, Trudt Sredne-Asiatskago Gosudartsv. Univ. (N.F.) Kara Chegal Bay, district of Lake Balkash, Russian Asia.

Apodemus sylvaticus ilex Thomas, 1922

1922. *Apodemus ilex* Thomas, Ann. Mag. N.H. *10:* 404. Mekong-Salween divide, Yunnan, China.

Not, apparently, a synonym of *orestes*, although G. Allen synonymized it. Known from a few localities in Yunnan, not occurring with *orestes*.

Apodemus sylvaticus tirae Montagu, 1923

1923. *Apodemus hebridensis tirae* Montagu, P.Z.S. *1922:* 934. Island of Tiree, Inner Hebrides.

Apodemus sylvaticus tural Montagu, 1923

1923. *Apodemus hebridensis tural* Montagu, P.Z.S. *1922:* 935. Island of Islay, Inner Hebrides.

Apodemus sylvaticus ghia Montagu, 1923

1923. *Apodemus hebridensis ghia* Montagu, P.Z.S. *1922:* 935. Island of Gigha, Inner Hebrides.

Apodemus sylvaticus larus Montagu, 1923

1923. *Apodemus hebridensis larus* Montagu, P.Z.S. *1922:* 936. Island of Jura, Inner Hebrides.

Apodemus (?) sylvaticus fulvipectus Ognev, 1924

1924. *Sylvaemus sylvaticus fulvipectus* Ognev, Rodentia of N. Caucasus, Rostov-on-Don, 47. Near Kobi, Military-Georgian Road, Northern Caucasus. A valid species according to Kuznetzov (1944) who states that it is intermediate in characters between *A. sylvaticus* and *A. flavicollis* and is regarded by some authors as a race of the former, by some as a race of the latter, by others as a distinct species, and by others as a cross between the two. It is said to occur with *sylvaticus* in the Caucasus, which is its range: But the only character given by Kuznetzov to separate this form from *A. sylvaticus* is that there is a small coloured chest stripe in *fulvipectus* (not in *sylvaticus*). The colour of the throat is I believe inconstant in both *A. sylvaticus* and *A. flavicollis* outside the U.S.S.R., and it seems too much stress has been laid on this particular character in Kuznetzov's key. A skull and skin of *fulvipectus* in the British Museum represents a form quite clearly referrable to *A. sylvaticus*.

Apodemus sylvaticus ciscaucasicus Ognev, 1924

1924. *Sylvaemus sylvaticus ciscaucasicus* Ognev, Rodentia of N. Caucasus, Rostov-on-Don, 48. Near Ordzhonikidze (Vladikawkaz), Northern Caucasus.

Apodemus (?) sylvaticus majusculus Turov, 1924

1924. *Sylvimus sylvaticus majusculus* Turov, C.R. Acad. Sci. Leningrad, 110. Bargusin Range, Transbaikalia. Measurements for skull given by Kuznetzov (1944) for this form (which he refers to *A. speciosus*) suggest it is a form of *sylvaticus*.

Apodemus sylvaticus pallidus Kashkarov, 1926

1926. *Apodemus arianus pallidus* Kashkarov, Key to Rodents of Turkestan, 22. Usbekistan Exp. Plant Prot. Station, Tashkent, Russian Turkestan.

Apodemus sylvaticus chorassanicus Ognev & Heptner, 1928

1928. *Mus (Sylvimus) sylvaticus chorassanicus* Ognev & Heptner, Zool. Anz. *75:* 263. Makhtum-Kala, near Ashabad, Kopet-Dag Mountains, Russian Turkestan.

Apodemus sylvaticus baessleri Dahl, 1929

1929. *Sylvaemus sylvaticus baessleri* Dahl, Bull. Soc. Nat. Crimée, *11:* 159. Mountain forests of Crimea. Not listed as valid by Kuznetzov, 1944, but antedates and perhaps supersedes one of the forms below named from the Ukraine.

Apodemus (?) sylvaticus planicola Sviridenko, 1936

1936. *Sylvimus fulvipectus planicola* Sviridenko, Abstr. Works Zool. Inst. Moscow St. Univ. *3:* 99. Near Levokumsk. Range: plains of Ciscaucasia.

Apodemus sylvaticus stankovici Martino, 1937

1937. *Sylvaemus sylvaticus stankovici* Martino, Ann. Mag. N.H. *19:* 517. Guri Velpnis, Korab Mountains, Yugoslavia.

Apodemus sylvaticus nesiticus Warwick, 1940

1940. *Apodemus hebridensis nesiticus* Warwick, J. Mamm. *21:* 347. Mingulay Island, Outer Hebrides.

Apodemus sylvaticus flaviventris Petrov, 1943

1943. *Sylvaemus sylvaticus flaviventris* Petrov, Posebna Izd. Sipska. Kral. Akad. Beograd. Prirodnauk Nat. No. 34: 375, 381. Kursumlija, Kopaonik Mountains, Serbia, Yugoslavia.

Apodemus sylvaticus charkovensis "Mig. 1936" Kuznetzov, 1944

1944. *Apodemus sylvaticus charkovensis* Kuznetzov in Bobrinskii, Mamm. U.S.S.R., 316. Type from near Zmiev. Range: Ukraine, east of Dnieper.

Apodemus sylvaticus vohlynensis "Char. 1936" Kuznetzov in Bobrinskii, 1944

1944. *Apodemus sylvaticus vohlynensis* Kuznetzov in Bobrinskii, Mamm. U.S.S.R., 316. Type from the Zhitomir Polese. Range: Ukraine, west of the Dnieper.

Apodemus (?) sylvaticus saxatilis "Krass. 1929" Kuznetzov in Bobrinskii, 1944

1944. *Apodemus fulvipectus saxatilis* Kuznetzov in Bobrinskii, Mamm. U.S.S.R., 317. Type from Narzanovsk district. Range: mountains of Ingushetiya (Caucasus).

We are unable to trace the original reference of the last-named three forms.

Apodemus agrarius Pallas, 1771 Striped Field Mouse

Approximate distribution of species: Germany, Holland, Denmark, Hungary, Poland, Yugoslavia, Rumania, Estonia, Russia where it appears common, north to Southern Karelia and Urals in part, south to Black Sea coast, foothills of Caucasus; Kazakstan and South-Western Siberia (Naruim region, Yeneseisk and Bratsk districts to Lake Baikal on north, Aktyubinsk, Akmolinsk, Lake Balkash, Frunze and Trans-Ili Alatau: Kuznetzov), Amur and Ussuri regions. Korea, Manchuria; China, from states of Chihli, Shensi and Shansi, Kansu, Shantung, Szechuan, Hupeh, Yunnan to about Burma border, Fukien and adjacent states; Formosa.

Apodemus agrarius agrarius Pallas, 1771

1771. *Mus agrarius* Pallas, Reise Russ. *1:* 454. Simbirsk, banks of the Volga, Russia (see p. 130).
1801. *Mus agrarius albostriatus* Bechstein, Gemeinn. Nat. Deutschlands, *1*, 2: 975. Thuringia, Germany.
1801. *Mus agrarius maculatus* Bechstein, *loc. cit.* Thuringia.
1816. *Mus rubens* Oken, Lehrb. Nat. *3*, 2: 893. Northern Germany.
1927. *Apodemus agrarius nikolskii* Migoulin, Trav. Soc. Nat. Charkov, *50*, 2: 41. Ukraine, Russia (Izyum district). Thought to be a synonym by Kuznetzov, 1944.

Range: Germany, Poland, Hungary, Yugoslavia, Rumania, Estonia, Southern Russia (except Ciscaucasia).

Apodemus agrarius chevrieri Milne-Edwards, 1868

1868. *Mus chevrieri* Milne-Edwards, Rech. Mamm. 288. Moupin, Szechuan, China.
1911. *Apodemus fergussoni* Thomas, Abstr. P.Z.S. 4 and P.Z.S. 172. Wenhsien, Southern Kansu, China.

Range: Kansu, Szechuan, Yunnan, Hupeh in China.

Apodemus agrarius ningpoensis Swinhoe, 1870

1870. *Mus ningpoensis* Swinhoe, P.Z.S. 637. Ningpo, Chekiang, Southern China.
1898. *Mus harti* Thomas, P.Z.S. 774. Kuatun, Fukien, China.

Range: Hupeh (part), and most of the states of South-Eastern China.

Apodemus agrarius mantchuricus Thomas, 1898

1898. *Mus agrarius mantchuricus* Thomas, P.Z.S. 774 (footnote). Manchuria, near Korean border.
1908. *Apodemus agrarius coreae* Thomas, P.Z.S. 8. Mingyong, 110 miles south-east of Seoul, Korea.
(?) 1939. *Apodemus agrarius gloveri* Kuroda, Bull. Biogeogr. Soc. Japan, Tokyo, *9:* 28. Altorian, Nekka Province, Jehol, North-Eastern China.

Range: Chihli, Korea, Amur-Ussuri region.

Apodemus agrarius pallidior Thomas, 1908

1908. *Apodemus agrarius pallidior* Thomas, P.Z.S. 8. Near Chefoo, Shantung, China. Range: Kansu, Shensi, Shansi, Shantung, to Szechuan (in part), China. Apparently does not occur with *chevrieri*.

Apodemus agrarius ognevi Johansen, 1923

1923. *Apodemus agrarius ognevi* Johansen, Trans. Tomsk Univ. *72:* 59. Novo-Kushov, River Chuluima, Western Siberia. Range: Western Siberia, North-Eastern Kazakstan.

Apodemus agrarius septentrionalis Ognev, 1924

1924. *Apodemus agrarius septentrionalis* Ognev, Rodentia of N. Caucasus, Rostov-on-Don, 45. Dmitrovsk, subdistrict Uesd of Moscow Govt., Russia. According to Kuznetzov a synonym of *A. a. karelicus* "Ehrstr." 1913, from Finland (Kuznetzov in Bobrinskii, 1944, Mamm. U.S.S.R. 315), but the reference to this form has not been traced. Range: Central and Northern Russia.

APODEMUS AGRARIUS TIANSCHANICUS Ognev, 1940

1940. *Apodemus agrarius tianschanicus* Ognev, Contr. Connais Faune et Flora U.R.S.S. *3:* 51, 83. Twenty kilometres south of Alma-Ata, Alma-Ata Reserve, Russian Tianshan.

APODEMUS AGRARIUS INSULAEMUS Tokuda, 1941

1941. *Apodemus agrarius* var. *insulaemus* Tokuda, Biogeogr. Tokyo, *4*, 1: 84. Lowlands of Formosa.

APODEMUS AGRARIUS CAUCASICUS "Dukelski, 1928", Kuznetzov in Bobrinskii, 1944

1944. *Apodemus agrarius caucasicus* Kuznetzov in Bobrinskii, Mamm. U.S.S.R., 315. Type from near Ordzhonikidze (Caucasus).

APODEMUS AGRARIUS VOLGENSIS (Ognev, 1940), Kuznetzov in Bobrinskii, 1944

1944. *Apodemus agrarius volgensis* Kuznetzov in Bobrinskii, Mamm. U.S.S.R., 315. Type from Astrakhan State Reserve. Range: Lower Volga.

We have been unable to trace the original reference for the last two forms.

Genus **LEMNISCOMYS** Trouessart, 1881

1881. *Lemniscomys* Trouessart, Bull. Soc. Études Sci. d'Angers, *10*, 2: 124. *Mus barbarus* Linnaeus.

1 species in the area covered by this list:

Lemniscomys barbarus, page 576

Lemniscomys barbarus Linnaeus — Barbary Striped Mouse; Zebra Mouse

Approximate distribution of species: Morocco, Algeria; also from Tropical Africa, Sudan, Kenya, Tanganyika, Northern Nigeria, Congo, Gambia, etc.

LEMNISCOMYS BARBARUS BARBARUS Linnaeus, 1767

1767. *Mus barbarus* Linnaeus, Syst. Nat. 12th ed. *1*, pt. 2, add. at end of vol., unpaged. "Barbaria" = Morocco. Range: Morocco, Algeria.

LEMNISCOMYS BARBARUS IFNIENSIS Agacino, 1935

1935. *Lemniscomys barbarus ifniensis* Agacino, Bol. Real. Soc. Esp. H.N. *35:* 390. Sidi Ifni, Ifni, South-Western Morocco.

Genus **HADROMYS** Thomas, 1911

1911. *Hadromys* Thomas, J. Bombay N.H. Soc. *20*, 4: 999. *Mus humei* Thomas.

1 species: *Hadromys humei*, page 576

On this genus see Ellerman, 1946, *Ann. Mag. N.H. 13:* 204.

Hadromys humei Thomas, 1886 — Hume's Rat

Approximate distribution of species: Manipur, to Kamrup (North-Western Assam).

HADROMYS HUMEI Thomas, 1886

1886. *Mus humei* Thomas, P.Z.S. 63. Moirang, Manipur.

Genus **MILLARDIA** Thomas, 1911

1911. *Millardia* Thomas, J. Bombay N.H. Soc. *20*, 4: 998. *Golunda meltada* Gray.
1911. *Grypomys* Thomas, J. Bombay N.H. Soc. *20*, 4: 999. *Mus gleadowi* Murray.
1917. *Guyia* Thomas, J. Bombay N.H. Soc. *25*, 2: 201. *Millardia kathleenae* Thomas.
1941. *Millardomys* Sody, Treubia, *18*, 2: 261. *Millardia kathleenae* Thomas.

3 species: *Millardia gleadowi*, page 577
Millardia kathleenae, page 577
Millardia meltada, page 577

For key to species see Ellerman, 1947, *J. Mamm. 28:* 370, 371.

Millardia meltada Gray, 1837 — Soft-furred Field Rat; Metad

Approximate distribution of species: Ceylon, Peninsular India north to Palanpur, Cutch, Sind, Kathiawar, etc., Punjab and Nepal Terai.

MILLARDIA MELTADA MELTADA Gray, 1837

1837. *Golunda meltada* Gray, Mag. N.H. *1:* 586. Dharwar, India.
1839. *Mus lanuginosus* Elliot, Madras J. Litt. Sci. *10:* 212.
1907. *Mus listoni* Wroughton, J. Bombay N.H. Soc. *17:* 998. Konkan (Kolaba district), Western India.
1907. *Mus comberi* Wroughton, J. Bombay N.H. Soc. *17:* 999. Nasik, Bombay.

Range: India, from Gwalior, Central India and Bihar south to Nilgiri Hills, Madras, etc. and Ceylon.

MILLARDIA MELTADA PALLIDIOR Ryley, 1914

1914. *Millardia meltada pallidior* Ryley, J. Bombay N.H. Soc. *22:* 659. Lunwa, Palanpur, Gujerat, 150 ft., India.
1917. *Millardia meltada dunni* Thomas, J. Bombay N.H. Soc. *25:* 202. Handiserah, Ambala, Punjab.

Range: Kathiawar, Gujerat, Cutch, Nepal Terai, Punjab, Sind.

Millardia kathleenae Thomas, 1914 — Miss Ryley's Soft-furred Field Rat

Approximate distribution of species: Middle Burma.

MILLARDIA KATHLEENAE Thomas, 1914

1914. *Millardia kathleenae* Thomas, J. Bombay N.H. Soc. *23*, 1: 29. Pagan, Burma.
Range: Pagan, Mt. Popa, Pyawbye in Burma.

Millardia gleadowi Murray, 1885 — Sand-coloured Rat

Approximate distribution of species: Western Sind to Gujerat, Kathiawar, and South Waziristan, India.

MILLARDIA GLEADOWI Murray, 1885

1885. *Mus gleadowi* Murray, P.Z.S. 809. Clifton Plain, Karachi, Western Sind, India. Range as above. Note: "*Pyromys priestlyi*" Thomas, 1911, J. Bombay N.H. Soc. *20*, 4: 996, was based apparently on a skull of this species mixed with a skin of *Mus platythrix* subsp.

Genus **DACNOMYS** Thomas, 1916

1916. *Dacnomys* Thomas, J. Bombay N.H. Soc. *24*, 3: 404. *Dacnomys millardi* Thomas.

1 species: *Dacnomys millardi*, page 578

Dacnomys millardi Thomas, 1916 Millard's Rat; Large-toothed Rat

Approximate distribution of species: Darjeeling district, Assam, and Laos in Indo-China.

DACNOMYS MILLARDI MILLARDI Thomas, 1916

1916. *Dacnomys millardi* Thomas, J. Bombay N.H. Soc. *24*, 3: 405. Gopaldhara, 3,440 ft., near Darjeeling, India. Range: to Naga Hills, Assam.

DACNOMYS MILLARDI WROUGHTONI Thomas, 1922

1922. *Dacnomys wroughtoni* Thomas, J. Bombay N.H. Soc. *28*, 2: 430. Dreyi, Mishmi 6,000 ft. (north of Assam).

DACNOMYS MILLARDI INGENS Osgood, 1932

1932. *Dacnomys millardi ingens* Osgood, Field Mus. Publ. Zool. *18:* 315. Phong Saly, Laos, Indo-China.

Genus **ARVICANTHIS** Lesson, 1842

1842. *Arvicanthis* Lesson, Nouv. Tabl. Regn. Anim. Mamm. 147. *Lemmus niloticus* Geoffroy.

1843. *Isomys* Sundevall, K. Svenska Vet. Ak. Handl. Stockholm, *1842:* 219. *Mus variegatus* Brants.

1 species in the area covered by the present list:

Arvicanthis niloticus, page 578

Arvicanthis niloticus Desmarest, 1822 Nile Rat; Kusu Rat

Approximate distribution of species: Egypt; Southern Arabia; besides these, in Tropical Africa, Sudan, Asben, Gold Coast, Sierra Leone, Tanganyika, Nigeria, Portuguese Guinea, etc., with closely allied species inhabiting other parts of Africa.

Arvicanthis niloticus niloticus Desmarest, 1822

1822. *Arvicola niloticus* Desmarest, Encycl. Méth., Mammalogie, 281. Egypt.
1823. *Hypudaeus variegatus* Lichtenstein, Doubl. Verz. Berl. Mus. 2. Fayum Province, Egypt.
1842. *Mus discolor* Wagner, Arch. Nat. *8*, 1: 9. Lower Egypt.
1843. *Isomys variegatus* var. *major* Sundevall, K. Svenska Vet. Ak. Handl. Stockholm, *1842*, 220. Syrkut, Nubia.
1843. *Isomys variegatus* var. *minor* Sundevall., *loc. cit.* 221.

Range: Egypt.

Arvicanthis niloticus naso Pocock, 1934

1934. *Arvicanthis niloticus naso* Pocock, Ann. Mag. N.H. *14:* 636. Lahej, near Aden, Southern Arabia. Known from Lahej and El Kubar, Southern Arabia.

Genus **RATTUS** Fischer, 1803

1775. *Rattus* Frisch, Natur-System der vierfüss Thiere, 7. (See page 2.)
1803. *Rattus* Fischer, National Mus. Nat. Paris, *2:* 128. (Misprinted *Ruttus.*) *Mus decumanus* Pallas = *Mus norvegicus* Berkenhout.
1881. *Epimys* Trouessart, Bull. Soc. Études Sci. Angers, *10:* 117. *Mus rattus* Linnaeus.
1903. *Lenothrix* Miller, Proc. U.S. Nat. Mus. *26:* 466. *Lenothrix canus* Miller. Valid as a subgenus; in the same sense as *Apomys* was used in Ellerman, 1947, P.Z.S. *117*, 1: 261, 265. It antedates *Apomys*.
1905. *Bullimus* Mearns, Proc. U.S. Nat. Mus. *28:* 450. *Bullimus bagopus* Mearns.
1905. *Limnomys* Mearns, Proc. U.S. Nat. Mus. *28:* 451. *Limnomys sibuanus* Mearns.
1905. *Tarsomys* Mearns, Proc. U.S. Nat. Mus. *28:* 453. *Tarsomys apoensis* Mearns.
1905. *Apomys* Mearns, Proc. U.S. Nat. Mus. *28:* 455. *Apomys hylocoetes* Mearns.
1910. *Stenomys* Thomas, Ann. Mag. N.H. *6:* 507. *Mus verecundus* Thomas. Valid as a subgenus; see Ellerman, 1947, P.Z.S. *117*, 1: 261, 263.
1910. *Bunomys* Thomas, Ann. Mag. N.H. *6:* 508. *Mus coelestis* Thomas.
1912. *Cremnomys* Wroughton, J. Bombay N.H. Soc. *21:* 340. *Cremnomys cutchicus* Wroughton. Valid as a subgenus.
1915. *Mastomys* Thomas, Ann. Mag. N.H. *16:* 477. *Mus coucha* Smith. Valid as a subgenus.
1916. *Diplothrix* Thomas, J. Bombay N.H. Soc. *24*, 3: 404 (footnote). *Lenothrix legata* Thomas.
1936. *Maxomys* Sody, Naturk. Tidjschr. Ned. Ind. *96:* 55. *Mus bartelsi* Jentink. Valid as a subgenus; see Ellerman, 1947, P.Z.S. *117*, 1: 261, 264.
1941. *Madromys* Sody, Treubia, *18*, 2: 260. *Mus blanfordi* Thomas.
1941. *Taeromys* Sody, Treubia, *18*, 2: 260. *Mus celebensis* Gray.
1941. *Pullomys* Sody, Treubia, *18*, 2: 260. *Mus pulliventer* Miller.
1941. *Mollicomys* Sody, Treubia, *18*, 2: 260. *Mus hoffmani* Matschie.
1941. *Geromys* Sody, Treubia, *18*, 2: 260. *Mus gestri* Thomas.
1941. *Frateromys* Sody, Treubia, *18*, 2: 260. *Mus fratrorum* Thomas.
1941. *Cironomys* Sody, Treubia, *18*, 2: 260. *Rattus hoogerwerfi* Chasen.
1941. *Christomys* Sody, Treubia, *18*, 2: 260. *Mus macleari* Thomas.
1941. *Arcuomys* Sody, Treubia, *18*, 2: 260. *Rattus arcuatus* Tate & Archbold.

RATTUS [*contd.*]

1911. *Octomys* Sody, Treubia, *18*, 2: 261. *Mus concolor* Blyth. Not *Octomys* Thomas, 1920, a member of the family Octodontidae.

1947. *Leopoldamys* Ellerman, P.Z.S. *117*, 1: 261, 267. *Mus sabanus* Thomas. Valid as a subgenus.

1917. *Berylmys* Ellerman, P.Z.S. *117*, 1: 261, 267. *Epimys manipulus* Thomas. Valid as a subgenus.

Partly for convenience I divided this very large genus into seven subgenera based on a great number of measured skulls. For subgeneric key see Ellerman, 1947, *P.Z.S. 117*, 1: 261. For the Indian species, see 1947, *J. Mamm. 28*, 371–381. Certainly about 28 valid species occur in the present region, perhaps more. I have not seen any of the forms described by Miller from the Nicobar and Andaman Islands. On these species see Ellerman (1949, 36–86).

Rattus berdmorei, page 600
Rattus blanfordi, page 580
Rattus bowersi, page 591
Rattus coxingi, page 595
Rattus cremoriventer, page 591
Rattus cutchicus, page 600
Rattus edwardsi, page 598
Rattus elia, page 595
Rattus elvira, page 601
Rattus exulans, page 590
Rattus fulvescens, page 593
Rattus huang, page 594
Rattus legatus, page 602
Rattus manipulus, page 600
Rattus montanus, page 587
Rattus mülleri, page 590
Rattus musschenbroeki, page 598
Rattus natalensis, page 601
Rattus nitidus, page 587
Rattus niviventer, page 591
Rattus norvegicus, page 588
Rattus ohiensis, page 596
Rattus palmarum and other named forms from Andaman and Nicobar Islands, page 602
Rattus rajah, page 596
Rattus rattoides, page 588
Rattus rattus, page 581
Rattus rogersi, page 590
Rattus sabanus, page 599

Subgenus *RATTUS* Fischer, 1803

Restricted to species with enlarged bullae, usually long palate and palatal foramina, and no extreme peculiarities.

Rattus blanfordi Thomas, 1881 — Blanford's Rat

Approximate distribution of species: Ceylon and Peninsular India, north to Bihar and Central Provinces.

RATTUS BLANFORDI Thomas, 1881

1881. *Mus blanfordi* Thomas, Ann. Mag. N.H. *7*: 24. Kadapa, Madras, India. Range: specimens examined from Central Provinces, Bihar, Bombay, Mysore, Madras, Eastern Ghats, Palni Hills, Cochin. Has been recorded from Ceylon.

Rattus rattus Linnaeus, 1758 House Rat; Black Rat

Approximate distribution of species: apparently as a wild animal in the greater part of India, Ceylon, Himalayan foothills, Burma, Southern China, Indo-China, Malay States, Sumatra, Java, Borneo, Celebes, Philippine Islands; introduced nearly throughout the world owing to its commensalism with man. In India wild (whitish-bellied) and commensal (dark-bellied) races occur together extensively. There is doubtless much interbreeding between the two. In an enormous species of this description it becomes conjectural whether much useful purpose is served by trying to divide the group into races at all, although here and there in the long list of names a very distinct one stands out, such as the Indian *R. r. satarae*. But many of the names listed are based on characters which are likely to prove inconstant. Commensal *R. rattus* is apparently absent from Siberia except perhaps some of the Pacific coastal towns (for instance, Kuznetzov says it was recently found in Vladivostock). It occurs almost throughout Europe, also in Asia Minor, Persia, Arabia, etc., in South-Western Asia, as well as almost throughout Indian territory, Southern China, Korea, and Japan. Also through most of North Africa.

Rattus rattus rattus Linnaeus, 1758

1758. *Mus rattus* Linnaeus, Syst. Nat. 10th ed. *1:* 61. Sweden.
1833. *Mus tectorum* var. *fuliginosus* Bonaparte, Iconogr. Faun. Ital. *1:* fasc. 3, pl. 22, fig. 1, name on plate only. Italy.
1842. *Mus subcaeruleus* Lesson, Nouv. Tabl. Règn. Anim. Mamm. 138. Rochefort, Charente Inférieure, France.
1867. *Rattus domesticus* Fitzinger, S.B. Akad. Wiss. Wien, *56*, 1: 64. Substitute for *rattus*.
1867. *Rattus domesticus fuscus* Fitzinger, *loc. cit.* Germany.
1867. *Rattus domesticus varius* Fitzinger, *loc. cit.* Germany.
1867. *Rattus domesticus fulvaster* Fitzinger, *loc. cit.* Austria and Germany.
1867. *Rattus domesticus albus* Fitzinger, *loc. cit.* 65. Austria, Hungary, Germany.
1867. *Rattus domesticus ater* Fitzinger, *loc. cit.* Germany.
1902. *Mus alexandrino-rattus* Fatio, Rev. Suisse de Zool. *10:* 402. Ticino, Switzerland.
1905. *Mus rattus ater* Millais, Zoologist, *4*, 9: 205. London, England. Other forms likely to be synonyms of this, or *R. r. alexandrinus*, or a commensal form of this species include:
1835. *Mus latipes* Bennett, P.Z.S. 89. Asia Minor.
1897. *Mus* (*Epimys*) *caeruleus* Trouessart, Cat. Mamm. *1:* 476. ?Accidental renaming of *subcaeruleus* Lesson.
1921. *Mus rattus jurassicus* Burg, Der Weidmann Bülach, No. 1, 7. Jura Valley (*N.V.*)
1923. *Mus rattus* var. *brookei* Crew, J. Heredity Baltimore, *14:* 221. (*N.V.*)

Numerous other synonyms, from various parts of the world. A commensal form, distributed variously throughout the world.

Rattus rattus alexandrinus Desmarest, 1819

(Rather a colour phase or "form" of the typical race than a subspecies as usually understood.)

1819. *Mus alexandrinus* Desmarest, Nouv. Dict. H.N. (ed. 2). *29*: 47. Alexandria, Egypt.
(?) 1837. *Mus asiaticus* Gray, Ann. Mag. N.H. *1:* 585. India.

RATTUS RATTUS ALEXANDRINUS [*contd.*]

1841. *Mus sylvestris* Pictet, Mém. Soc. Phys. H.N. Genève, *9:* 153. Near Geneva, Switzerland.
1841. *Mus leucogaster* Pictet, *loc. cit.* 154. Near Geneva.
1841. *Mus nemoralis* de Sélys-Longchamps, Atti della sec. Riun. degli Sci. Ital. Torino, 247. Near Geneva. Substitute for *sylvestris*.
1845. *Mus picteti* Schinz, Synops. Mamm. *2:* 142. Substitute for *leucogaster*.
(?) 1859. *Mus crassipes* Blyth, J. Asiat. Soc. Bengal, *28:* 295. India.
1882. *Mus rattus intermedius* Ninni, Atti del reale Inst. Veneto, *8*, 5: 574. Venice, Italy.

Numerous other synonyms from various parts of the world. A commensal form, distributed variously throughout the world.

RATTUS RATTUS FRUGIVORUS Rafinesque, 1814

1814. *Musculus frugivorus* Rafinesque, Précis des Découv. et Travaux Somiol. 13. Sicily.
1825. *Mus tectorum* Savi, Nuovo Giorn. de 'Letterati Pisa, *10:* 74. Pisa, Italy. (*M.T.* Reference from Sherborn.)
1827. *Myoxus siculae* Lesson, Man. de Mamm. 274. Substitute for *frugivorus*.

Perhaps a colour phase of the typical race. Commensal, and distributed intermittently in Eurasia, North Africa, etc.

RATTUS RATTUS FLAVIVENTRIS Brants, 1827

1827. *Mus flaviventris* Brants, Gesl. Muizen, 108. Arabia.

RATTUS RATTUS RUFESCENS Gray, 1837

1837. *Mus rufescens* Gray, Ann. Mag. N.H. *1:* 585. Dharwar, India. The common Indian commensal form; very like *alexandrinus*.
1822. *Mus indicus* Desmarest, Mamm. *2:* 299. Not of Bechstein, 1800.
1839. *Mus flavescens* Elliot, Madras J. Litt. Sci. *10:* 214. Dharwar.
1863. *Mus infralineatus* Blyth, Cat. Mamm. As. Soc. 116, *nom. nud.*

Range: throughout Peninsular India, northwards about to Punjab.

RATTUS RATTUS ERYTHRONOTUS Temminck, 1845

1845. *Mus erythronotus* Temminck, Faun. Japon. Mamm. 50. Japan. Tokuda (1941) makes this a synonym of *R. r. rattus*.

RATTUS RATTUS TANEZUMI Temminck, 1845

1845. *Mus tanezumi* Temminck, Faun. Japon. Mamm. 51, pl. 15, figs. 5–7. Japan.
1845. *Mus nezumi* Temminck, Faun. Japon., pl. 15 (footnote), p. 51.

Based apparently on a commensal form. Range: Hondo.

RATTUS RATTUS BRUNNEUS Hodgson, 1845

1845. *Mus brunneus* Hodgson, Ann. Mag. N.H. *15:* 266. Nepal.

A large form, apparently commensal.

RATTUS RATTUS BRUNNEUSCULUS Hodgson, 1845

1845. *Mus brunneusculus* Hodgson, Ann. Mag. N.H. *15:* 267. Nepal.
1919. *Rattus rattus sikkimensis* Hinton, J. Bombay N.H. Soc. *26:* 394. Pashok, Sikkim, 3,500 ft., India.

Range: Sikkim, Nepal, Assam. (The form inhabiting Manipur has been subspecifically separated by Roonwal, 1948, Proc. Nat. Inst. Sci. India, *14:* 386.)

RATTUS RATTUS KANDIANUS Kelaart, 1850

1850. *Mus kandianus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 212. Nuwara Eliya, Ceylon.
1850. *Mus tetragonurus* Kelaart, *loc. cit.* 217 (330 in 1887 reprint). Hendala, near Colombo, Ceylon.
1887. *Mus kandiyanus* Kelaart, *loc. cit.* 326. (Emendation, in reprint of the 1850 publication.)

RATTUS RATTUS CEYLONUS Kelaart, 1850

1850. *Mus ceylonus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 213. Ceylon.
1851. *Mus nemoralis* Blyth, J. Asiat. Soc. Bengal, *20:* 168. Not of de Sélys Longchamps, 1841. The common commensal form in Ceylon.

RATTUS RATTUS ARBOREUS Horsfield, 1851

1851. *Mus arboreus* (Buchanan Hamilton) Horsfield, Cat. E. Ind. Mus. 141. Bengal. Range: Nepal Terai, United Provinces, Bihar and Bengal, India.

RATTUS (?) RATTUS ROBUSTULUS Blyth, 1859

1859. *Mus robustulus* Blyth, J. Asiat. Soc. Bengal, *28:* 294. Schwegyin, Tenasserim.

RATTUS RATTUS ANDAMANENSIS Blyth, 1860

1860. *Mus* (*Leggada*) *andamanensis* Blyth, J. Asiat. Soc. Bengal, *29:* 103. Andaman Islands, Bay of Bengal.

RATTUS RATTUS FLAVIPECTUS Milne-Edwards, 1872

1872. *Mus flavipectus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7: 93. Moupin, Szechuan, China.
1872. *Mus ouang-thomae* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, 7: 93. Kiangsi, China. Evidently *flavipectus* is based on the common commensal form from Southern China (Szechuan and Yunnan to Fukien, Hainan, etc., also Annam, Indo-China).

RATTUS RATTUS GERMAINI Milne-Edwards, 1872

1872. *Mus germani* (misprint for *germaini*) Milne-Edwards, Rech. Mamm. 289. Condor Island, off coast Southern Indo-China.

RATTUS RATTUS SLADENI Anderson, 1879

1879. *Mus sladeni* Anderson, Zool. Yunnan, 305. Ponsee, Kakhyen Hills, 3,500 ft., Western Yunnan. Range: Yunnan and Fukien, China, Indo-China.

RATTUS RATTUS YUNNANENSIS Anderson, 1879

1879. *Mus yunnanensis* Anderson, Zool. Yunnan, 306. Yunnan ("the common house rat at Ponsee, Hotha, and Tengyuechow"). A commensal form.

RATTUS (?) RATTUS FLEBILIS Miller, 1902

1902. *Mus flebilis* Miller, Proc. U.S. Nat. Mus. *24:* 762. Henry Lawrence Island, Andaman Islands.

RATTUS RATTUS JALORENSIS Bonhote, 1903

1903. *Mus jalorensis* Bonhote, Fasc. Malay Zool. *1:* 28. Nong Chik, Patani, Peninsular Siam. Ranges north to Nan, Siam (specimens in B.M.), southwards to Malaya, Sumatra, Borneo.

RATTUS (?) RATTUS ATRIDORSUM Miller, 1903

1903. *Mus atridorsum* Miller, Proc. Biol. Soc. Washington, *16:* 50. Barren Island, Andaman Islands.

1902. *Mus atratus* Miller, Proc. U.S. Nat. Mus. *24:* 767. Not of Philippi, 1900.

RATTUS RATTUS MINDANENSIS Mearns, 1905

1905. *Mus mindanensis* Mearns, Proc. U.S. Nat. Mus. *28:* 442. Mindanao, Philippine Islands. According to Tokuda (1941) occurs in the Island of Botel Tobago, near Formosa.

RATTUS RATTUS DENTATUS Miller, 1913

1913. *Epimys rattus dentatus* Miller, Smiths. Misc. Coll. *61*, 21: 14. Hastings Island, Mergui Archipelago.

RATTUS RATTUS INSULANUS Miller, 1913

1913. *Epimys rattus insulanus* Miller, Smiths. Misc. Coll. *61*, 21: 14. Helfer Island, Mergui Archipelago.

RATTUS RATTUS EXSUL Miller, 1913

1913. *Epimys rattus exsul* Miller, Smiths. Misc. Coll. *61*, 21: 15. James Island, Mergui Archipelago.

RATTUS RATTUS FORTUNATUS Miller, 1913

1913. *Epimys rattus fortunatus* Miller, Smiths. Misc. Coll. *61*, 21: 15. Chance Island, Mergui Archipelago.

RATTUS RATTUS SHIGARIUS Miller, 1913

1913. *Epimys rattus shigarius* Miller, Proc. Biol. Soc. Washington, *26:* 198. Shigar, Baltistan, 9,000 ft., Kashmir.

RATTUS RATTUS KELAARTI Wroughton, 1915

1915. *Epimys kelaarti* Wroughton, J. Bombay N.H. Soc. *24:* 48. Pattipola, Highlands of Ceylon.

RATTUS RATTUS PORTUS Kloss, 1915

1915. *Epimys rattus portus* Kloss, J.N.H. Soc. Siam, *1:* 221. Koh Chang (Island), Siam.

RATTUS RATTUS POENITENTIARII Kloss, 1915

1915. *Epimys rattus poenitentiarii* Kloss, J.N.H. Soc. Siam, *1:* 222. Koh Phai (Island), Siam.

RATTUS RATTUS RANGENSIS Kloss, 1916

1916. *Epimys rattus rangensis* Kloss, P.Z.S. 56. Koh Rang (Island), Siam.

RATTUS RATTUS KLUMENSIS Kloss, 1916

1916. *Epimys rattus klumensis* Kloss, P.Z.S. 56. Koh Klum (Island), Siam.

RATTUS RATTUS MAKENSIS Kloss, 1916

1916. *Epinys rattus makensis* Kloss, P.Z.S. 56. Koh Mak (Island), Siam.

RATTUS RATTUS KRAENSIS Kloss, 1916

1916. *Epimys rattus kraensis* Kloss, P.Z.S. 57. Koh Kra (Island), Siam.

RATTUS RATTUS THAI Kloss, 1917

1917. *Rattus rattus thai* Kloss, J.N.H. Soc. Siam, *2:* 286. Raheng, Siam.

RATTUS RATTUS TISTAE Hinton, 1918

1918. *Rattus rattus tistae* Hinton, J. Bombay N.H. Soc. *26:* 68. Pashok, Sikkim, India. Apparently a semi-commensal form, from Sikkim, Mishmi, Manipur, and Assam.

RATTUS RATTUS BHOTIA Hinton, 1918

1918. *Rattus rattus bhotia* Hinton, J. Bombay N.H. Soc. *26:* 72. Hasimara, Bhutan Duars, North-Eastern India.

RATTUS RATTUS NARBADAE Hinton, 1918

1918. *Rattus rattus narbadae* Hinton, J. Bombay N.H. Soc. *26:* 77. Sakot, Hoshangabad, Central Provinces, 1,200 ft., India.

1918. *Rattus rattus girensis* Hinton, J. Bombay N.H. Soc. *26:* 83. Sasan, Junagadh, Kathiawar, 400 ft., India.

RATTUS RATTUS SATARAE Hinton, 1918

1918. *Rattus rattus satarae* Hinton, J. Bombay N.H. Soc. *26:* 87. Ghatmatha, Satara district, about 2,000 ft., India. Range: Satara district, and Eastern Ghats, India.

RATTUS RATTUS WROUGHTONI Hinton, 1919

1919. *Rattus rattus wroughtoni* Hinton, J. Bombay N.H. Soc. *26:* 384. Coonoor, 6,000 ft., Nilgiri Hills, India. Range: Southern Peninsular India.

RATTUS RATTUS GANGUTRIANUS Hinton, 1919

1919. *Rattus rattus gangutrianus* Hinton, J. Bombay N.H. Soc. *26:* 389. Ranibagh, Naini Tal, Kumaon, 2,500 ft., India. Range: to Punjab.

RATTUS RATTUS KHYENSIS Hinton, 1919

1919. *Rattus rattus khyensis* Hinton, J. Bombay N.H. Soc. *26:* 398. Twenty-five miles west of Kindat, 600 ft., Chin Hills, Western Burma.

1919. *Rattus rattus tatkonensis* Hinton, J. Bombay N.H. Soc. *26:* 402. Tatkon, west bank of Chindwin River, Burma. Range: Burma, from west of the Chindwin to at least Mt. Popa, Toungoo district, and Shan States.

RATTUS RATTUS TIKOS Hinton, 1919

1919. *Rattus rattus tikos* Hinton, J. Bombay N.H. Soc. *26:* 400. Tenasserim Town, Tenasserim. Range includes Malcolm Island, King Island, Sullivan Island, all Mergui Archipelago, and Lower Siam.

RATTUS RATTUS MACMILLANI Hinton, 1919

1919. *Rattus macmillani* Hinton, J. Bombay N.H. Soc. *26:* 409. Hkamti (west bank), Upper Chindwin, Burma.

RATTUS RATTUS LANENSIS Kloss, 1919

1919. *Rattus rattus lanensis* Kloss, J.N.H. Soc. Siam, *3:* 378. Koh Lan, Inner Gulf of Siam.

RATTUS RATTUS KRAMENSIS Kloss, 1919

1919. *Rattus rattus kramensis* Kloss, J.N.H. Soc. Siam, *3:* 379. Koh Kram, Inner Gulf of Siam.

RATTUS RATTUS MESANIS Kloss, 1919

1919. *Rattus rattus mesanis* Kloss, J.N.H. Soc. Siam, *3:* 379. Koh Mesan (Island), near Cape Liant, South-Eastern Siam.

RATTUS RATTUS KORATENSIS Kloss, 1919

1919. *Rattus rattus koratensis* Kloss, J.N.H. Soc. Siam, *3:* 379. Lat Bua Kao, Eastern Siam.

RATTUS RATTUS SUEIRENSIS Cabrera, 1921

1921. *Rattus rattus sueirensis* Cabrera, Bol. Real. Soc. Esp. H.N. *21:* 159. Mogador, Morocco. New name for *R. r. chionogaster* Cabrera, preoccupied.)

1921. *Rattus rattus chionogaster* Cabrera, Bol. Real. Soc. Esp. H.N 50th Anniv. Extraordinary Vol., 51. Mogador. Not of Lönnberg and Mjöberg, 1916.

RATTUS RATTUS NERICOLA Cabrera, 1921

1921. *Rattus rattus nericola* Cabrera, Mem. Real. Soc. H.N. Madrid, *50:* 54. Wad Saf-Saf (Lower Muluya), Morocco. Doubtless this and the last were based on introduced forms.

Rattus rattus mollicolus Robinson & Kloss, 1922

1922. *Rattus molliculus* Robinson & Kloss, Ann. Mag. N.H. *9:* 97. Daban, Phanrang Province, Southern Annam, Indo-China.

Rattus rattus hainanicus G. Allen, 1926

1926. *Rattus rattus hainanicus* G. Allen, Amer. Mus. Nov. 217, 3. Namfong, Island of Hainan.

Rattus rattus ruthenus Ognev & Stroganov, 1936

1936. *Rattus rattus ruthenus* Ognev & Stroganov, Abstr. Works. Zool. Inst. Moscow State Univ. *3:* 82. Former Elminsk subdistrict of former Govt. of Smolensk, Russia. A commensal form.

Rattus montanus Phillips, 1932

Approximate distribution of species: Ceylon.

Rattus montanus Phillips, 1932

1932. *Rattus montanus* Phillips, Ceylon J. Sci. Sec. B. *16:* 323. West Haputale, Ohiya, 5,200–6,000 ft., Ceylon.

Rattus nitidus Hodgson, 1845 Himalayan Rat

Approximate distribution of species: Kumaon, Nepal, Assam, Northern Burma, Siam, Indo-China, China from Fukien to Yunnan, Szechuan, Kansu, Hainan. This species is like *R. rattus* with which it occurs extensively, but has longer nasals proportionately (which are usually 40 per cent. or more of occipitonasal length). G. Allen has referred several Chinese named forms to this species, which are not *R. nitidus* as here understood, and are more likely from their descriptions to represent *R. rattoides*.

Rattus nitidus nitidus Hodgson, 1845

1845. *Mus nitidus* Hodgson, Ann. Mag. N.H. *15:* 267. Nepal. (Type in B.M.)
1845. *Mus pyctoris* Hodgson, Ann. Mag. N.H. *15:* 267. Nepal.
1845. *Mus horeites* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
1849. *Mus aequicaudalis* Hodgson, Ann. Mag. N.H. *3:* 203. Nepal.
(?) 1879. *Mus rubricosa* Anderson, Anat. Zool. Res. Yunnan, 306. Ponsee and Hotha, Kakhyen Hills, Western Yunnan, China.

Range: Kumaon, Nepal, Sikkim, Assam, Mishmi, Tonkin, Yunnan, Fukien and according to G. Allen also Szechuan, Kansu, Hainan, Kiangsu and Hunan, China.

Rattus nitidus rahengis Kloss, 1918

1918. *Rattus griseiventer rahengis* Kloss, J.N.H. Soc. Siam, *3:* 74. Raheng, Siam.

Rattus nitidus obsoletus Hinton, 1919

1919. *Rattus nitidus obsoletus* Hinton, J. Bombay N.H. Soc. *26:* 415. Fifty miles west of Kindat, Chin Hills, 5,000 ft., Western Burma.

Rattus rattoides Hodgson, 1845 Turkestan Rat

The species as here understood comprises forms which occur extensively with *R. rattus* from which they are not always distinguishable cranially but which usually have the tail dark above and pale below (not wholly dark).

Approximate distribution of species: Afghanistan, Russian Turkestan (west and south of Kirghizia, Usbekistan, Tadzhikistan except Eastern Pamirs (Kuznetzov), Kashmir, Punjab, Nepal, also Fukien and Kiangsu in China, and apparently Hainan, Yunnan, Shensi, possibly Formosa.

Rattus rattoides rattoides Hodgson, 1845

1845. *Mus rattoides* Hodgson, Ann. Mag. N.H. *15:* 267. Nepal. Range: Kumaon, Nepal, Sikkim. (It is just possible that this is a semi-commensal variety of the wild *R. r. turkestanicus*.)

Rattus (?) rattoides losea Swinhoe, 1870

1870. *Mus losea* Swinhoe, P.Z.S. 637. Formosa.

(?) 1870. *Mus canna* Swinhoe, P.Z.S. 636. Near Tamsuy, Formosa.

I am not sure of the status of either of these forms. The name *canna* takes priority if they are both the same.

Rattus rattoides turkestanicus Satunin, 1903

1903. *Mus turkestanicus* Satunin, Ann. Mus. St. Pétersb. *7:* 588. Assam-bob, Ferghana, Russian Turkestan (April, 1903).

1903. *Mus vicerex* Bonhote, Ann. Mag. N.H. *11:* 473. Simla, Northern India, (May, 1903.)

Range: Russian Turkestan as above, Kashmir, Punjab, Afghanistan (specimens from the last in B.M.).

Rattus rattoides celsus G. Allen, 1926

1926. *Rattus humiliatus celsus* G. Allen, Amer. Mus. Nov. 217, 5. Taku Ferry, west bank of Yangtze Kiang River, Yunnan, 6,000 ft., China.

Rattus rattoides exiguus Howell, 1927

1927. *Rattus rattus exiguus* Howell, Proc. Biol. Soc. Washington, *40:* 43. Seventy miles south-west of Yenpingfu, Fukien, 500 ft., China. Ranges to Hainan.

Rattus rattoides insolatus Howell, 1927

1927. *Rattus humiliatus insolatus* Howell, Proc. Biol. Soc. Washington, *40:* 44. Twelve miles south of Yenanfu, Shensi, 4,000 ft., China.

Rattus norvegicus Berkenhout, 1769 Norway Rat; Brown Rat

Approximate distribution of species: world-wide through introduction by man, possibly originally a native of Palaearctic Asia, where it is common in the cooler countries, throughout China, Siberia.

RATTUS NORVEGICUS NORVEGICUS Berkenhout, 1769

1769. *Mus norvegicus* Berkenhout, Outlines N.H. Gt. Britain & Ireland, *1:* 5. (*N.V.*) Great Britain.
1779. *Mus decumanus* Pallas, Nov. Spec. Quad. Glir. Ord. 91. Europe.
1779. *Mus surmolottus* Severinus, Tentamen Zool. Hungaricae, 73. Central Europe.
1800. *Mus decumanus hybridus* Bechstein, Pennants Allgem. Uebersicht. Vierf. Thiere, *2:* 497, 713. Waltershausen, Germany.
1816. *Mus caspius* Oken, Lehrb. Nat. *3*, 2*:* 895. Alternative for *decumanus*.
1837. *Mus hibernicus* Thompson, P.Z.S. 52. Rathfriland, Co. Down, Ireland.
1841. *Mus decumanoides* Hodgson, J.A.S. Bengal, *10*, 915, *nom. nud.*
1848. *Mus maniculatus* Wagner, Arch. Nat. *14:* 186. Egypt.
(?) 1907. *Rattus norvegicus* var. *albus* Hatai, Biol. Bull. Woods Hole Mass. *12:* 266–273. "Albino Rat of North America" (var. *albus* (*oculis rubicundis*)). Not *albus* Fitzinger, 1867.
1918. *Mus sylvaticus discolor* Noack, Z. Forst u. Jagdwesen Berlin, 50: 466. Eberswalde, near Berlin, Germany. (*N.V.*) (Status *fide* Schwarz.)
(?) 1930. *Rattus norvegicus* var. *otomoi* Yamada, Jap. Faun. Experim. Medicine, *14*, 3: 346. Fukugawa, Tokyo, Japan. (*N.V.*)

Specimens examined from Calcutta, Ceylon, Johore, Fukien, Formosa, Liukiu Islands, Spain, Switzerland, England, France, Russia, Ireland, Norway, Germany, Corfu, etc.

RATTUS NORVEGICUS CARACO Pallas, 1779

1779. *Mus caraco* Pallas, Nov. Spec. Quad. Glir. Ord. 91. Eastern Siberia.
1868. *Mus humiliatus* Milne-Edwards, Rech. Mamm. 137, pl. 41, fig. 1. Near Pekin, Chihli, China. (Status *fide* Schwarz.)
1872. *Mus griseipectus* Milne-Edwards, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 93. Szechuan, China. (Status *fide* Schwarz.)
1874. *Mus plumbeus* Milne-Edwards, Rech. Mamm. 138. Suenhoafu, Chihli, China.
1912. *Mus norvegicus primarius* Kastschenko, Ann. Mus. St. Pétersb. *17:* 401. Transbaikalia.
1914. *Epimys norvegicus socer* Miller, Proc. Biol. Soc. Washington, *27:* 90. Taochow (Taocheo), Kansu, China.
1928. *Rattus humiliatus sowerbyi* Howell, Proc. Biol. Soc. Washington, *41:* 42. Near Imienpo, Northern Kirin, 500 ft., Manchuria.

Specimens examined from Transbaikalia, Manchuria, Yunnan, Japan, Chihli, Shantung and Hunan in China, Sakhalin, Kurile Islands. Ranges throughout China (*socer*).

There is one co-type in the British Museum of *humiliatus* which has a small skull, and which I formerly thought represented a small species. G. Allen made it a race of *nitidus*, but it is definitely not that; its much shorter nasals preclude its representing that species. Dr. E. Schwarz when visiting London recently told me he thought it was based on a young specimen of *Rattus norvegicus caraco*, and has kindly examined all the Paris material for *humiliatus* and writes that they are all nothing but young or almost half-grown *caraco*. He also states that the type of *griseipectus* is the same; not *nitidus* with which it is currently placed as a synonym. Dr. Schwarz also tells us that the short-tailed Manchurian form *sowerbyi* represents *caraco*.

RATTUS NORVEGICUS LONGICAUDUS Mori, 1937

1937. *Rattus norvegicus longicaudus* Mori, J. Chosen N.H. Soc. *22:* 40–42. Utsuryo Island, Japan. (N.V.) Unrepresented in London.

Rattus exulans Peale, 1848 Little Rat

Approximate distribution of species: (partly a commensal species), on the mainland of Asia from Burma, Indo-China, Siam, Malay States; also Sumatra, Java Borneo, Celebes, Philippines, New Guinea, eastwards into the islands of the Pacific.

RATTUS EXULANS EXULANS Peale, 1848. Extralimital)

1848. *Mus exulans* Peale, U.S. Explor. Exped. *8*: 47. (N.V.) Tahiti.

RATTUS EXULANS CONCOLOR Blyth, 1859

1859. *Mus concolor* Blyth, J. Asiat. Soc. Bengal, *28:* 295. Schwegyin, Burma. Range: Burma northwards to Bhamo, and Upper Chindwin; Tenasserim, Siam, Indo-China, Malay Peninsula and various small adjacent islands.

Subgenus *STENOMYS* Thomas, 1910

As here understood based on species which resemble *Rattus sensu stricto* but with smaller bullae; palate remaining long, and palatal foramina long in all except the *R. dominator* group from Celebes.

Rattus mülleri Jentink, 1879 Müller's Rat

Approximate distribution of species: Borneo, Sumatra, and some adjacent small islands, Malay States, northwards to Tenasserim; Nicobar Is. (B.M.).

(RATTUS MÜLLERI MÜLLERI Jentink, 1879. Extralimital)

1879. *Mus mülleri* Jentink, Notes Leyden Mus. *2:* 16. Batang Singalan, Sumatra.

RATTUS MÜLLERI VALIDUS Miller, 1900

1900. *Mus validus* Miller, Proc. Biol. Soc. Washington, *13:* 141. Trang, Lower Siam. Range: Malay States, Penang, northwards into Southern Tenasserim.

Rattus rogersi Thomas, 1907

Approximate distribution of species: South Andaman Island, Bay of Bengal. Doubtless a race of one of the earlier-named forms from the Andaman or Nicobar Islands, but this is the only named form available in London from these islands except a few specimens of *R. rattus*.

RATTUS ROGERSI Thomas, 1907

1907. *Mus rogersi* Thomas, Ann. Mag. N.H. *20:* 206. North of Ike Bay, west coast of South Andaman Island.

Rattus bowersi Anderson, 1879 Bower's Rat

Approximate distribution of species: Assam, Burma, Yunnan to Fukien in Southern China, Indo-China, Siam, Malay States.

RATTUS BOWERSI BOWERSI Anderson, 1879

1879. *Mus bowersii* Anderson, Zool. Res. Yunnan, 304. Hotha, Kakhyen Hills, Western Yunnan, 4,500 ft., China.

1897. *Mus latouchei* Thomas, Ann. Mag. N.H. *20:* 113. Kuatun, North-Western Fukien, China.

Range: Assam, Burma in part, Chinese range of the species, Tonkin and Laos, Indo-China.

RATTUS (?) BOWERSI MACKENZIEI Thomas, 1916

1916. *Epimys mackenziei* Thomas, J. Bombay N.H. Soc. *24*, 3: 410. Haingyan, 50 miles west of Kindat, Chin Hills, Burma.

1921. *Rattus wellsi* Thomas, J. Bombay N.H. Soc. *28*, 1: 26. Mawphlang, Khasi Hills, 5,500 ft., Assam.

Range: Burma and Assam, in part, and Manipur. Not or scarcely occurring with the last. Possibly may have to be considered as a valid, smaller, species (with *feae* and *kennethi* as races).

RATTUS (?) BOWERSI FEAE Thomas, 1916

1916. *Rattus mackenziei feae* Thomas, J. Bombay N.H. Soc. *24*, 3: 412. Thagata, Mulaiyit Range, Tenasserim.

RATTUS BOWERSI LACTIVENTER Kloss, 1918

1918. *Rattus bowersi lactiventer* Kloss, J.N.H. Soc. Siam, *3:* 80. Sikawtur, 40 miles north-west of Raheng, Siam.

RATTUS (?) BOWERSI KENNETHI Kloss, 1918

1918. *Rattus kennethi* Kloss, J.N.H. Soc. Siam, *3:* 81. Sikawtur, 40 miles north-west of Raheng, Siam. From the same locality as the last; I do not know whether at a different altitude. A small form (if adult), much like *mackenziei*, suggesting that there may be two *bowersi*-like species (a large one and a small one) occurring together in part of the range, in which case *mackenziei* would stand for the smaller one, with *feae* and *kennethi* as races. The type of *kennethi* is now in the British Museum.

Subgenus *MAXOMYS* Sody, 1936

As here understood, based on species with small bullae, and short palate, but the palatal foramina remain relatively long.

Rattus niviventer Hodgson, 1836 White-bellied Rat

Approximate distribution of species, as here understood: Chihli, Shantung, Shensi, Shansi, Kansu, Szechuan, Yunnan, Fukien and adjacent states, Hupeh, Hainan in China; Eastern Punjab, Nepal, Assam, Burma; Indo-China, Siam, Malay States, Sumatra, Java, Bali, and possibly represented in Borneo. Formosa.

RATTUS NIVIVENTER NIVIVENTER Hodgson, 1836

1836. *Mus (Rattus) niviventer* Hodgson, J. Asiat. Soc. Bengal, *5:* 234. Katmandu, Nepal.

1891. *Mus niveiventer* Blanford, Fauna Brit. India, Mamm. *2:* 412.

Range: Simla, Kumaon, Nepal, Northern Burma. Possibly the next is a synonym.

RATTUS NIVIVENTER CONFUCIANUS Milne-Edwards, 1872

1872. *Mus confucianus* Milne-Edwards, Nouv. Arch. Mus. H.N. 7, Bull.: 93. Moupin, Szechuan, China.

1911. *Epimys excelsior* Thomas, Abstr. P.Z.S. 4; P.Z.S. 170. Tatsienlu, Western Szechuan.

1922. *Rattus confucianus littoreus* Cabrera, Bol. Soc. Esp. H.N. *22:* 167. Foochow, Fukien, China.

1930. *Rattus confucianus yaoshanensis* Shih, Bull. Dept. Biol. Sun. Yatsen Univ. *4:* 6. Loshiang and Kutchen, Kwangsi, China.

1931. *Rattus confucianus sinianus* Shih, Bull. Dept. Biol. Sun. Yatsen Univ. *12:* 3. Yao Shan, Kwantung, China.

1931. *Rattus elegans* Shih, Bull. Dept. Biol. Sun. Yatsen Univ. *12:* 7. Yao Shan, Kwantung.

Range: Yunnan, Szechuan, Hupeh, Kansu, Fukien, Kwantung, Kwangsi, etc. in China; Indo-China. Doubtless specimens from Northern Burma recorded by Anthony represent the typical race (*niviventer*).

RATTUS NIVIVENTER BUKIT Bonhote, 1903

1903. *Mus bukit* Bonhote, Ann. Mag. N.H. *11:* 125. Bukit Besar, Jalor, 2,500 ft., Malay States.

(?) 1913. *Epimys lepidus* Miller, Smiths. Misc. Coll. *61:* 20. Bok Pyin, Southern Tenasserim.

Range: Malay States, northwards to Tenasserim and Northern Siam (Chiengmai district).

RATTUS NIVIVENTER SACER Thomas, 1908

1908. *Mus confucianus sacer* Thomas, P.Z.S. 6. Chefoo, Shantung, China.

1908. *Mus confucianus luticolor* Thomas, Abstr. P.Z.S. 45; P.Z.S. *1909:* 972. Yenanfu, Shensi, China.

1911. *Epimys confucianus canorus* Thomas, P.Z.S. 690. Wenhsien country, Southern Kansu, China.

Range: Shantung, Shansi, Shensi, Kansu, Hunan in China.

RATTUS NIVIVENTER LEPCHA Wroughton, 1916

1916. *Epimys lepcha* Wroughton, J. Bombay N.H. Soc. *24:* 429. Chuntang, 5,350 ft., Sikkim. Range: Chuntang and Lachen, Sikkim, India.

RATTUS NIVIVENTER MENTOSUS Thomas, 1916

1916. *Rattus mentosus* Thomas, J. Bombay N.H. Soc. *24*, 4: 643. Hkamti, 500 ft., Upper Chindwin, Burma. Range: Assam, Mishmi, Northern Burma (in part).

Rattus niviventer marinus Kloss, 1916

1916. *Epimys jerdoni marinus* Kloss, P.Z.S. 50. Koh Chang (Island), Siam.

Rattus niviventer culturatus Thomas, 1917

1917. *Rattus culturatus* Thomas, Ann. Mag. N.H. *20:* 198. Mt. Arizan, 8,000 ft., Formosa.

Rattus niviventer chihliensis Thomas, 1917

1917. *Rattus confucianus chihliensis* Thomas, Ann. Mag. N.H. *20:* 199. Imperial Tombs, 65 miles east of Pekin, Chihli, North-Eastern China.

Rattus niviventer champa Robinson & Kloss, 1922

1922. *Rattus bukit champa* Robinson & Kloss, Ann. Mag. N.H. *9:* 96. Langbian Peaks, Southern Annam, Indo-China.

Rattus niviventer lotipes G. Allen, 1926

1926. *Rattus confucianus lotipes* G. Allen, Amer. Mus. Nov. 217, 11. Nodoa, Hainan.

Rattus niviventer condorensis Chasen & Kloss, 1926

1926. *Rattus bukit condorensis* Chasen & Kloss, J.N.H. Soc. Siam, Suppl. 6, 4, 358. Condor Island, off Southern Cochin-China, Indo-China.

Rattus fulvescens Gray, 1847 Chestnut Rat

Approximate distribution of species, as here understood: Kumaon, Nepal, Assam, Burma, to Chinese border, South-Eastern Tibet, whence the British Museum has recently acquired a specimen (from Tongyuk Pome, 8,500 ft.), Indo-China, Malay States, Sumatra, Java.

Rattus fulvescens fulvescens Gray, 1847

1847. *Mus fulvescens* Gray, Cat. Hodgson Coll. 18. Nepal. (Published 9 January 1847, Sherborn.)
1849. *Mus caudatior* Hodgson, Ann. Mag. N.H. *3:* 203. Nepal.
1863. *Leggada jerdoni* Blyth, J. Asiat. Soc. Bengal, *32:* 350. Sikkim. (This name may have been based on a *Mus*.)
1863. *Mus octomammis* Gray, Cat. Hodgson Coll. 2nd ed. 10.
1913. *Epimys gracilis* Miller, Smiths. Misc. Coll. *61:* 21. Mt. Mulaiyit, Tenasserim.
1926. *Rattus huang vulpicolor* G. Allen, Amer. Mus. Nov. 217, 14. Namting River, Yunnan-Burma border.

Range: Kumaon, Nepal, Sikkim, many localities in Assam, Mishmi, Northern Burma, Shan States, Tenasserim, probably also Indo-China (whence skins examined).

Rattus fulvescens brahma Thomas, 1914

1914. *Epimys brahma* Thomas, J. Bombay N.H. Soc. *23*, 2: 232. Anzong Valley, Mishmi Hills, 6,000 ft. (north of Assam). Range: also Adung Valley, Upper Burma.

RATTUS FULVESCENS MEKONGIS Robinson & Kloss, 1922

1922. *Rattus blythi mekongis* Robinson & Kloss, Ann. Mag. N.H. *9:* 96. Pak Mat, Mekong River, Laos, 18°53′ N., Indo-China.

Rattus huang Bonhote, 1905

Approximate distribution of species: China, from Fukien, Kwantung, Kansu, and Hainan. Indo-China (Tonkin, specimens in B.M.).

RATTUS HUANG Bonhote, 1905

1905. *Mus huang* Bonhote, Abstr. P.Z.S. 19. 1906, P.Z.S. *1905, 2:* 387. Kuatun, Fukien, China.

1905. *Mus ling* Bonhote, Abstr. P.Z.S. 19. 1906, P.Z.S. *1905, 2:* 388. Chungfengling, Fukien.

1930. *Rattus flavipilis* Shih, Bull. Dept. Biol. Sun Yatsen Univ. *8:* 2. Substitute for *huang*.

1930. *Rattus flavipilis minor* Shih, *ibid.* 7. Kutchen, Loshiang, Kwangsi, China. Substitute for *ling*.

1931. *Rattus wongi* Shih, Bull. Dept. Biol. Sun Yatsen Univ. *12:* 6. Yao Shan, Kwantung, China.

Range: as above.

Rattus cremoriventer Miller, 1900 Dark-tailed Rat

Approximate distribution of species: Sumatra, Java, perhaps Borneo, Malay States, Tenasserim, Assam, Siam, and Indo-China. Forms also named from some of the small islands in the Malay region. (The form named *R. c. malawali* by Chasen & Kloss from Mallewallé Island, North Borneo, the type of which has recently been received in London, is not *cremoriventer* as here understood, and seems more like *R. canus*.)

(RATTUS CREMORIVENTER CREMORIVENTER Miller, 1900. Extralimital)

1900. *Mus cremoriventer* Miller, Proc. Biol. Soc. Washington, *13:* 144. Trang, Lower Siam.

RATTUS CREMORIVENTER GILBIVENTER Miller, 1903

1903. *Mus gilbiventer* Miller, Smiths. Misc. Coll. *45:* 35. Sullivan Island, Mergui Archipelago.

RATTUS CREMORIVENTER TENASTER Thomas, 1916

1916. *Epimys tenaster* Thomas, Ann. Mag. N.H. *17:* 425. Mt. Mulaiyit, 5,000–6,000 ft., Tenasserim.

RATTUS (?) CREMORIVENTER BLYTHI Kloss, 1917

1917. *Rattus blythi* Kloss, Rec. Ind. Mus. *13:* 8. Schwegvin, Tenasserim.

1859. *Mus cinnamomeus* Blyth, J. Asiat. Soc. Bengal, *28:* 294. Not of Pictet, 1844. Status uncertain. Apparently near *cremoriventer* but with white incisors, which is an unusual character. No specimens in London.

Rattus cremoriventer langbianis Robinson & Kloss, 1922

1922. *Rattus cremoriventer langbianis* Robinson & Kloss, Ann. Mag. N.H. *9:* 96. Langbian Peaks, Annam, Indo-China.

Rattus cremoriventer indosinicus Osgood, 1932

1932. *Rattus indosinicus* Osgood, Field Mus. Publ. Zool. *18:* 307. Chapa, Tonkin, Indo-China. Range: also Naga Hills, Assam, and Western Burma.

Rattus cremoriventer vientianensis Bourret, 1942

1942. *Rattus indosinicus vientianensis* Bourret, C.R. Conseil Rech. Sci. Indochine, *2:* 29. Vientiane region, Laos, Indo-China. (*N.V.* Reference confirmed from Paris.)

Rattus coxingi Swinhoe, 1864 Swinhoe's Rat

Approximate distribution of species, as here understood: Formosa; Indo-China; Yunnan, Szechuan, Shensi (G. Allen) and Northern Burma (Anthony). The three races I tentatively refer to this species are very distinct from each other.

Rattus coxingi coxingi Swinhoe, 1864

1864. *Mus coninga* Swinhoe, P.Z.S. 185, 382. Formosa.
1870. *Mus coxinga* Swinhoe, P.Z.S. 636. Thomas, *1892*, Ann. Mus. Genova, *10:* 939 (footnote).
1903. *Mus coxingi* Bonhote, Fasc. Malay Zool. *1:* 33, 36.

Rattus coxingi andersoni Thomas, 1911

1911. *Epimys andersoni* Thomas, Abstr. P.Z.S. 4; P.Z.S. 171. Omi-San, Szechuan, China.
1912. *Epimys zappeyi* G. Allen, Bull. Mus. Comp. Zool. Harvard Coll. *40:* 225. Washan, Szechuan, 9,000 ft., China.

Range: Szechuan, Yunnan, Shensi, Northern Burma.

Rattus coxingi moi Robinson & Kloss, 1922

1922. *Rattus moi* Robinson & Kloss, Ann. Mag. N.H. *9:* 95. Arbre Broye, Langbian Mountains, Annam, Indo-China.

Rattus eha Wroughton, 1916 Smoke-bellied Rat; Little Himalayan Rat

Approximate distribution of species: Nepal, Sikkim, Northern Burma, and Yunnan.

Rattus eha eha Wroughton, 1916

1916. *Epimys eha* Wroughton, J. Bombay N.H. Soc. *24:* 428. Lachen, Sikkim, 8,800 ft., India. Range: Nepal, Sikkim.

Rattus eha ninus Thomas, 1922

1922. *Rattus eha ninus* Thomas, Ann. Mag. N.H. *10:* 404. Kiuchiang-Salween divide, 28° N., 11,000 ft., Yunnan, China. Range: Yunnan, Northern Burma.

Subgenus *LENOTHRIX* Miller, 1903

As here understood based on *Rattus* Rats with short palate, short palatal foramina, and small bullae. Formerly I called this group *Apomys* (Mearns, 1905), but the British Museum now possesses several specimens of *Rattus canus* Miller, 1903 (type of *Lenothrix*) which was first named from Pulau Tuangku, off Sumatra, and subsequently discovered in the Malay States, Java and Borneo. This species proves to belong in the present group, and *Lenothrix* antedates *Apomys*.

Rattus ohiensis Phillips, 1929 Ohiya Rat

Approximate distribution of species: Ohiya, Ceylon.

Rattus ohiensis Phillips, 1929

1929. *Rattus ohiensis* Phillips, Ceylon J. Sci. Sec. B. *15:* 167. West Haputale, Ohiya, 6,000 ft., Ceylon.

Rattus rajah Thomas, 1894 Rajah Rat

Approximate distribution of species: Borneo, Palawan, Java, Sumatra, Malay States and many adjacent small islands, Tenasserim, Siam, Indo-China.

It is customary (e.g. Chasen, 1940) to divide this species into two, *R. rajah* and *R. surifer* (Miller, 1900), because of the occurrence of two forms together in the Malay States (*surifer* and *pellax* Miller, 1900), and possibly Borneo (*rajah* and *bandahara*). (The two Sumatran forms seem to occur at different altitudes.) However, the cranial differences which I previously thought might divide *rajah* and *surifer* I am now doubtful about, and I am unable, on the material available in the British Museum, to agree with this division. Pending a general revision, I use *rajah*, the first name in the group, for the more normal members, and think *pellax* may well be the second species (not *surifer*). I think there is a possibility that *pellax* and *surifer* might prove synonymous, in which case there would be only one species, and *pellax* takes priority over *surifer*. There seem to be far too many named races. Of those represented in London, in the present list, *eclipsis* and *surifer* seem the most likely to be valid.

(Rattus rajah rajah Thomas, 1894. Extralimital)

1894. *Mus rajah* Thomas, Ann. Mag. N.H. *14:* 451. Mt. Batu Song, Sarawak, Borneo.

Rattus rajah surifer Miller, 1900

1900. *Mus surifer* Miller, Proc. Biol. Soc. Washington, *13:* 148. Trang, 3,000 ft., Lower Siam. Range: to Tenasserim, Hastings Island, Hayes Island, King Island, Kisseraing Island, Malcolm Island, Ross Island, Sullivan Island, Tavoy Island, all Mergui Archipelago. Also Penang, Malay States, Sumatra in part.

Rattus rajah luteolus Miller, 1903

1903. *Mus luteolus* Miller, Smiths. Misc. Coll. *45:* 36. St. Matthew Island, Mergui Archipelago.

Rattus rajah umbridorsum Miller, 1903
1903. *Mus umbridorsum* Miller, Smiths. Misc. Coll. *45:* 37. Loughborough Island, Mergui Archipelago.

Rattus rajah casensis Miller, 1903
1903. *Mus casensis* Miller, Smiths. Misc. Coll. *45:* 38. Chance Island, Mergui Archipelago.

Rattus rajah bentincanus Miller, 1903
1903. *Mus bentincanus* Miller, Smiths. Misc. Coll. *45:* 38. Bentinck Island, Mergui Archipelago.

Rattus rajah domelicus Miller, 1903
1903. *Mus domelicus* Miller, Smiths. Misc. Coll. *45:* 39. Domel Island, Mergui Archipelago.

Rattus rajah finis Kloss, 1916
1916. *Epimys surifer finis* Kloss, P.Z.S. 51. Klong Menao, South-Eastern Siam. Range: to Indo-China.

Rattus rajah changensis Kloss, 1916
1916. *Epimys surifer changensis* Kloss, P.Z.S. 52. Koh Chang (Island), Siam.

Rattus rajah kutensis Kloss, 1916
1916. *Epimys surifer kutensis* Kloss, P.Z.S. 52. Koh Kut (Island), Siam.

Rattus rajah pelagius Kloss, 1916
1916. *Epimys surifer pelagius* Kloss, P.Z.S. 53. Koh Rang (Island), Siam.

Rattus rajah eclipsis Kloss, 1916
1916. *Epimys surifer eclipsis* Kloss, P.Z.S. 53. Koh Kra (Island), Siam.

Rattus rajah connectens Kloss, 1916
1916. *Epimys surifer connectens* Kloss, P.Z.S. 53. Koh Mak (Island), Siam.

Rattus rajah tenebrosus Kloss, 1916
1916. *Epimys surifer tenebrosus* Kloss, P.Z.S. 54. Koh Klum (Island), Siam.

Rattus rajah siarma Kloss, 1918
1918. *Rattus rajah siarma* Kloss, J.N.H. Soc. Siam, *3*, 2: 75. Sikawtur, 40 miles north-west of Raheng, Siam.

Rattus rajah koratis Kloss, 1919
1919. *Rattus rajah koratis* Kloss, J.N.H. Soc. Siam, *3*, 4: 376. Lat Bua Kao, Eastern Siam.

Rattus rajah kramis Kloss, 1919
1919. *Rattus rajah kramis* Kloss, J.N.H. Soc. Siam, *3*, 4: 377. Koh Kram, Inner Gulf of Siam.

Rattus musschenbroeki Jentink, 1879 Musschenbroek's Rat

Approximate distribution of species, as here understood: Celebes, Borneo, Sumatra, Malay States, and a few small adjacent islands; apparently Eastern Siam.

This species as I visualize it is one of the least specialized of the subgenus *Lenothrix*, and one of the smallest. There are two groups of races, *musschenbroeki*, etc., from Celebes, and *R. m. whiteheadi* Thomas, 1894, and immediate allies from Borneo, Sumatra, and Malay States. The latter group consists of the smallest forms of the species, and from description Gyldenstolpe's form *sakeratensis* apparently represents it in Siam. The British Museum has recently acquired the type of the form from Mallawallé Island, described as *Rattus whiteheadi piratae* Chasen, 1940. This has very large palatal foramina, and I do not believe it is rightly allocated in this species.

Rattus musschenbroeki musschenbroeki Jentink, 1879. Extralimital)

1879. *Mus musschenbroekii* Jentink, Notes Leyden Mus. *1:* 10. Menado, Celebes.

Rattus (?) musschenbroeki sakeratensis Gyldenstolpe, 1916

1916. *Rattus sakeratensis* Gyldenstolpe, K. Svenska Vet. Ak. Handl. Stockholm, *57*, 2: 46. Sakerat, Eastern Siam.

Subgenus *LEOPOLDAMYS* Ellerman, 1947

Based on large species with excessively small bullae; toothrow longer than in *R. rajah* and allies, which is the only group which approaches them in reduction of bullae.

Rattus edwardsi Thomas, 1882 Edwards's Rat

Approximate distribution of species: Sikkim, Assam, Northern Burma; Szechuan, Fukien, Kwantung in China; Indo-China, Malay States, Sumatra, Sipora Island (west of Sumatra).

Rattus edwardsi edwardsi Thomas, 1882

1822. *Mus edwardsi* Thomas, P.Z.S. 587. Mountains of Western Fukien (probably Kuatun), China.

1916. *Epimys listeri* Thomas, J. Bombay N.H. Soc. *24*, 3: 406. Pashok, Darjeeling, 3,500 ft., India.

1922. *Mus melli* Matschie, Arch. Nat. *88*, 10: 26. Mahutze Shan, Kwantung, China.

1922. *Rattus edwardsi milleti* Robinson & Kloss, Ann. Mag. N.H. *9:* 94. Dalat, Langbian Plateau, Annam, Indo-China.

Range: Darjeeling district, Naga Hills, Mishmi, Northern Burma, Laos and Annam in Indo-China, Fukien, Kwantung in South-Eastern China.

Rattus edwardsi gigas Satunin, 1902

1902. *Mus gigas* Satunin, Ann. Mus. Zool. St. Pétersb. 7: 562. Near Lunganfu (near Chodsigou Valley), Szechuan, China.

Rattus sabanus Thomas, 1887 Noisy Rat

Approximate distribution of species: Borneo, Java, Sumatra, Malay States and adjacent small islands, Tenasserim, Siam, Indo-China, Assam.

(Rattus sabanus sabanus Thomas, 1887. Extralimital)

1887. *Mus sabanus* Thomas, Ann. Mag. N.H. *20:* 269. Saba, Mt. Kina Balu, Borneo.

Rattus sabanus vociferans Miller, 1900

1900. *Mus vociferans* Miller, Proc. Biol. Soc. Washington, *13:* 138. Trang, 1,000 ft., Lower Siam. Range: Malay States, Sumatra (part), north to Tenasserim; King Island, Kisseraing Island, Ross Island, Tavoy Island, Mergui Archipelago.

Rattus sabanus stridulus Miller, 1903

1903. *Mus stridulus* Miller, Smiths. Misc. Coll. *45:* 29. Bentinck Island, Mergui Archipelago.

Rattus sabanus matthaeus Miller, 1903

1903. *Mus matthaeus* Miller, Smiths. Misc. Coll. *45:* 29. St. Matthew Island, Mergui Archipelago.

Rattus sabanus lucas Miller, 1903

1903. *Mus lucas* Miller, Smiths. Misc. Coll. *45:* 30. St. Luke Island, Mergui Archipelago.

Rattus sabanus stentor Miller, 1913

1913. *Epimys stentor* Miller, Smiths. Misc. Coll. *61:* 19. James Island, Mergui Archipelago.

Rattus sabanus insularum Miller, 1913

1913. *Epimys vociferans insularum* Miller, Smiths. Misc. Coll. *61:* 19. Domel Island, Mergui Archipelago.

Rattus sabanus clarae Miller, 1913

1913. *Epimys vociferans clarae* Miller, Smiths. Misc. Coll. *61:* 20. Clara Island, Mergui Archipelago.

Rattus sabanus herberti Kloss, 1916

1916. *Epimys vociferans herberti* Kloss, J.N.H. Soc. Siam, *2:* 25. Pak Jong, Eastern Siam.

Rattus sabanus garonum Thomas, 1921

1921. *Rattus listeri garonum* Thomas, J. Bombay N.H. Soc. *28,* 1: 27. Tura, Garo Hills, 1,400 ft., Assam.

RATTUS SABANUS REVERTENS Robinson & Kloss, 1922

1922. *Rattus sabanus revertens* Robinson & Kloss, Ann. Mag. N.H. *9:* 95. Daban, Phanrang Province, Southern Annam, Indo-China.

None of Miller's insular races is available for examination. *R. s. vociferans* is certainly valid, having a much longer tail proportionately than the typical race. *R. s. garonum* is near the typical race, but valid; the other two named forms listed here are very little known.

Subgenus *BERLMYS* Ellerman, 1947

Based on species with unusually elongated diastema; other characters reminiscent of *R. bowersi* group.

Rattus manipulus Thomas, 1916 Manipur Rat

Approximate distribution of species: Manipur, Western Burma; Naga Hills, Assam.

RATTUS MANIPULUS MANIPULUS Thomas, 1916

1916. *Epimys manipulus* Thomas, J. Bombay N.H. Soc. *24*, 3: 413. Kampat, Kabaw Valley, 20 miles west of Kindat, 600 ft., Western Burma.

Rattus berdmorei Blyth, 1851 Grey Rat

Approximate distribution of species: Tenasserim, Siam. A rare species.

RATTUS BERDMOREI BERDMOREI Blyth, 1851

1851. *Mus berdmorei* Blyth, J. Asiat. Soc. Bengal, *20:* 173. Mergui, Burma.

RATTUS BERDMOREI MAGNUS Kloss, 1916

1916. *Epimys berdmorei magnus* Kloss, P.Z.S. 57. Klong Menao, South-Eastern Siam.

RATTUS BERDMOREI MULLULUS Thomas, 1916

1916. *Epimys berdmorei mullulus* Thomas, J. Bombay N.H. Soc. *24*, 3: 413. Thagata, Mulaiyit Range, Tenasserim.

Subgenus *CREMNOMYS* Wroughton, 1912

Based on species with unusually lengthened palatal foramina.

Rattus cutchicus Wroughton, 1912 Cutch Rat

Approximate distribution of species: Cutch, Kathiawar, Southern Rajputana, Bihar, and Southern Peninsular India (Mysore, Bellary, Eastern Ghats).

RATTUS CUTCHICUS CUTCHICUS Wroughton, 1912

1912. *Cremnomys cutchicus* Wroughton, J. Bombay N.H. Soc. *21:* 340. Dhonsa, Cutch, India. Range: Cutch, with a similar form inhabiting the Eastern Ghats.

Rattus cutchicus medius Thomas, 1916

1916. *Cremnomys medius* Thomas, J. Bombay N.H. Soc. *24*, 2: 240. Kudia, Junagadh, Kathiawar, 2,500 ft., India.

1916. *Cremnomys medius caenosus* Thomas, J. Bombay N.H. Soc. *24*, 2: 241. Singar, Gaya, Bihar and Orissa, 1,400 ft., India.

Range: Gujerat, Kathiawar and Bihar.

Rattus cutchicus rajput Thomas, 1916

1916. *Cremnomys medius rajput* Thomas, J. Bombay N.H. Soc. *24*, 2: 241. Mt. Abu, Rajputana, 4,300 ft., India.

Rattus cutchicus australis Thomas, 1916

1916. *Cremnomys australis* Thomas, J. Bombay N.H. Soc. *24*, 2: 242. Vijayanagar, Bellary, 1,500 ft., India. Range includes Kolar, Mysore.

Rattus cutchicus siva Thomas, 1916

1916. *Cremnomys australis siva* Thomas, J. Bombay N.H. Soc. *24*, 2: 242. Sivasamudram, Southern Mysore, 2,500 ft., India. Range includes French Rocks, Mysore.

Rattus elvira Ellerman, 1947

Approximate distribution of species: Eastern Ghats, India.

Rattus elvira Ellerman, 1947

1947. *Rattus* (*Cremnomys*) *elvira* Ellerman, Ann. Mag. N.H. *13:* 207. (For March, *1946.*) Kurumbapatti, Salem district, Eastern Ghats, India.

Subgenus *MASTOMYS* Thomas, 1915

Rattus natalensis Smith, 1834 Coucha Rat; Multimammate Rat

For use of this name instead of *R. coucha auct.* see Roberts, 1944, *Bull. S. Afr. Mus. Assoc. 3:* 239.

Approximate distribution of species: Africa, from Deelfontein, districts of Albany, Pondoland, King Williams Town, northwards through British Bechuanaland, Orange Free State, Transvaal, Natal, South-West Africa, Southern Rhodesia, Portuguese East Africa, Tanganyika, Uganda, Kenya, Abyssinia, Sudan, Nigeria, Gambia, northwards to Morocco.

(Rattus natalensis natalensis Smith, 1834. Extralimital)

1834. *Mus natalensis* Smith, S. Afr. Quart. J. *2:* 156. About Port Natal = Durban, South Africa.

Rattus natalensis peregrinus de Winton, 1898

1898. *Mus peregrinus* de Winton, P.Z.S. *1897:* 959. Ras-el-Ain, Haha, Morocco.

1906. *Mus calopus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *6:* 365. Mogador, Morocco.

(?) Subgenus *DIPLOTHRIX* Thomas, 1916

I do not know the exact subgeneric status of the species included here, as although the type skull is in London, the bullae are unknown to me, and it is difficult to allocate it.

Rattus legatus Thomas, 1906

Approximate distribution of species: Liukiu Islands.

RATTUS LEGATUS Thomas, 1906

1906. *Lenothrix legata* Thomas, Ann. Mag. N.H. *17:* 88. Amamioshima, Liukiu Islands.

1909. *Mus bowersi okinavensis* Namiya, Dobuts. Z. Tokyo, *21:* 455. Okinawa Island, Liukiu Islands. Also occurs Tokunoshima.

The following, unrepresented in the British Museum, are not allocated to a subgenus.

Rattus palmarum Zelebor, 1869 (and other named forms from Nicobar and Andaman Islands)

1869. *Mus palmarum* Zelebor, Reise der Oesterr. Fregatte Novara Zool. Th. 1, Wirbelth. 1, Säuget. 26. Nicobar Islands.

1861. *Mus novarae* Fitzinger, S.B. Akad. Wiss. Wien, *42:* 394, *nom. nud.*

Other names:

1902. *Mus stoicus* Miller, Proc. U.S. Nat. Mus. *24:* 759. Henry Lawrence Island, Andaman Islands. (Possibly allied to *R. palmarum*, which is a short-tailed species, large in size.)

1902. *Mus taciturnus* Miller, Proc. U.S. Nat. Mus. *24:* 762. South Andaman Island, Andaman Islands. (? Subspecies of *stoicus.*)

1902. *Mus pulliventer* Miller, Proc. U.S. Nat. Mus. *24:* 765. Great Nicobar Island, Nicobar Islands. Not improbably the prior name for *R. rogersi.*

1902. *Mus burrus* Miller, Proc. U.S. Nat. Mus. *24:* 768. Trinkut Island, Nicobars. (Very likely *R. rattus* group.)

1902. *Mus burrulus* Miller, Proc. U.S. Nat. Mus. *24:* 770. Car Nicobar, Nicobar Islands. (? Subspecies of *burrus.*)

1902. *Mus burrescens* Miller, Proc. U.S. Nat. Mus. *24:* 771. Great Nicobar Island, Nicobar Islands. (? Subspecies of *burrus.*)

Genus **MUS** Linnaeus, 1758

1758. *Mus* Linnaeus, Syst. Nat. 10th ed. *1:* 59. *Mus musculus* Linnaeus.

1814. *Musculus* Rafinesque, Précis. des Découv. et Trav. Somiolog. 13. Substitute for *Mus.*

1837. *Leggada* Gray, Charlesworths Mag. N.H. *1:* 586. *Mus booduga* Gray.

1911. *Pyromys* Thomas, J. Bombay N.H. Soc. *20:* 996, in part; *Pyromys priestlyi* Thomas – skin of *Mus platythrix* mixed with skull of *Millardia gleadowi.*

1914. *Leggadilla* Thomas, J. Bombay N.H. Soc. *22*, 4: 682. *Mus platythrix* Bennett.

1915. *Coelomys* Thomas, J. Bombay N.H. Soc. *23*, 3: 414. *Coelomys mayori* Thomas. Valid as a subgenus.
1916. *Oromys* Robinson & Kloss, J. Straits Branch Roy. Asiat. Soc. *73:* 270. Not of Leidy, 1853. *Oromys crociduroides* Robinson & Kloss from Sumatra.
1917. *Tautatus* Kloss, J.N.H. Soc. Siam, *2:* 279. *Tautatus thai* Kloss.
1918. *Mycteromys* Robinson & Kloss, J. Fed. Malay States Mus. *8:* 57. To replace *Oromys* Robinson & Kloss. *Oromys crociduroides* Robinson & Kloss. Valid as a subgenus.

There are some extralimital synonyms.

8 species in the area covered by this list:

Mus booduga, page 609
Mus cervicolor, page 609
Mus famulus, page 610
Mus fernandoni, page 612
Mus mayori, page 612
Mus musculus, page 603
Mus pahari, page 612
Mus platythrix, page 611

For a provisional key to these species see Ellerman, 1947, *J. Mamm. 28:* 382–387. The differences between some of the species are average rather than absolute, and perhaps there are some errors of judgment in racial allocation of the forms referred here. Certainly *musculus*, *platythrix*, *booduga*, *pahari* and *mayori* are valid, and also most probably the *famulus* association, though possibly *cooki* should have been retained as a species. The *cervicolor* association is less certain, as it becomes very similar to *booduga* individually, although in one or two places the two occur together. *M. fernandoni* is very reminiscent of *platythrix*, and is little known.

The following names are not certainly identified:

1876. *Mus bocourti* Milne-Edwards, Rech. Mamm. 291 (footnote). Siam, no exact locality.
1879. *Mus sublimis* Blanford, Yarkand. Miss. Mamm. 51. Tankse, west of Pankong Lake, Ladak. Wroughton thought this was an *Apodemus* but it may equally well represent *Mus*, and there are no specimens available.
1845. *Mus*? *hydrophilus* Hodgson, Ann. Mag. N.H. *15:* 267. Nepal.

Subgenus *MUS* Linnaeus, 1758

Mus musculus Linnaeus, 1758 House Mouse

Recently reviewed by Schwarz & Schwarz, 1943, *J. Mamm. 24:* 59. The arrangement and nomenclature of these authors is here adopted, except that one of their valid racial names (*orientalis*) is preoccupied, and *vignaudi* appears available to replace it.

Approximate distribution of species: world-wide through introduction by man. According to Schwarz & Schwarz, if I understand their views correctly, wild forms occur in Central Asia from east bank of the Volga to Yellow Sea, north to Zungaria, south to Persia; Southern Russia and Eastern Balkans; Manchuria and Japan; Spain, France, Balearic Isles, and North-West Africa. Other forms are regarded by these authors as either commensal or primarily hybrids between commensal and wild races.

MUS MUSCULUS MUSCULUS Linnaeus, 1758

1758. *Mus musculus* Linnaeus, Syst. Nat. 10th ed. *1:* 62. Upsala, Sweden.
1827. *Mus musculus striatus* Billberg, Synops. Faunae Scandinaviae, 6. Skåne, Sweden.
1827. *Mus musculus albicans* Billberg, *loc. cit.* Skane, Sweden.
1827. *Mus musculus niveus* Billberg, *loc. cit.* Molle, Norway.
1840. *Mus hortulanus* Nordmann in Demidoff Voy. Russie, *3:* 45. Northern Caucasus.
1840. *Mus nordmanni* Keyserling & Blasius, Arch. Nat. *1:* 330.
1867. *Mus musculus helvolus* Fitzinger, S.B. Akad. Wiss. Wien. *56,* 1: 70. Hungary.
1899. *Mus musculus tomensis* Kastschenko, Res. Zool. Exped. to Altai, *1898;* 46. Cherga Village, Tomsk Govt., Siberian Altai.
1908. *Mus musculus tataricus* Satunin, Mitt. Kaukas. Mus. Tiflis, *4:* 61, 113. Bankovsky Promysel, Caspian Sea.
1910. *Mus musculus taddei* Kastschenko, Ann. Mus. Zool. St. Pétersb. *15:* 278. Selo Kivet, Verkhne Udinsk, Transbaikalia.
1912. *Mus wagneri sareptanicus* Hilzheimer, Acta Soc. Fauna & Flora Fenn. *34,* 10: 14. Sarepta, Lower Volga, Russia.
1918. *Mus spicilegus germanicus* Noack, Z. Forst u. Jagdwesen Berlin, 50, 308. Eberswalde, near Berlin, Germany. (*M.V.*)
1922. *Mus spicilegus heroldii* Krausse, Arch. Nat. Berlin, *88:* 137. Swinemunde, Pomerania, Germany.
1924. *Mus musculus funereus* Ognev, Rodents N. Caucasus, 52. Kamennaya Steppe, Bobrovsk district, Voronej Govt., Russia.
1924. *Mus musculus borealis* Ognev, Rodents N. Caucasus, 52. Village Upta, Kem subdistrict of Govt. of Archangelsk, Russia.
1927. *Mus spicilegus hapsaliensis* Reinwaldt, Act. Com. Univ. Tartu, *12:* 50. Haapsalu, North-Western Estonia.
1932. *Mus musculus vinogradovi* Argyropulo, Trav. Inst. Zool. Acad. Sci. U.R.S.S. 223. Yakutsk, Siberia.
1932. *Mus musculus tomensis* morph *rufiventris* Argyropulo, Trav. Inst. Zool. Acad. Sci. U.R.S.S. 224. Alare Bagansk, Govt. of Irkutsk, Siberia.
1932. *Mus musculus tomensis* natio *amurensis* Argyropulo, *loc. cit.* 225. Sergeevka, Grodekovsk district, Vladivostock region.
1932. *Mus musculus variabilis* Argyropulo, Trav. Inst. Zool. Acad. Sci. U.R.S.S. 225. Katon-Karagai, 1,000 m., Altai Mountains.
1934. *Mus musculus nogaiorum* Heptner, Folia Zool. Hybrob. *6:* 23. Twenty-five miles north of Kisljar, Daghestan, Northern Caucasus.
1934. *Mus spicilegus polonicus* Niezabitowsky, Z. Säuget. *9:* 193. Poland.
1940. *Mus musculus kaleh-peninsularis* Goodwin, Amer. Mus. Nov. 1082, 10. Kaleh Peninsula, Mazanderan, Persia, 80 ft. below sea level.

Range: co-extensive with that of the wild type, *spicilegus*, which is replaced by it in and around human habitations, also as far as Elbe River, Germany, Czechoslovakia, Austria, Denmark, Scandinavia, to White Sea, Russia, and introduced into Siberia along the Siberian railroad, and spreading from it. As far as Lake Baikal and Yakutsk. Also Transcaucasia, and south shore of Caspian and Black Sea (Schwarz & Schwarz).

MUS MUSCULUS DOMESTICUS Rutty, 1772

1772. *Mus domesticus* Rutty, Essay N.H. Co. Dublin, *1:* 281. Dublin, Ireland.
1801. *Mus musculus albus* Bechstein, Gemeinn. Nat. Deutschlands, 2nd ed. *1:* 955. Thuringia, Germany.
1801. *Mus musculus flavus* Bechstein, *loc. cit.* Thuringia.
1801. *Mus musculus maculatus* Bechstein, *loc. cit.* Thuringia.
1801. *Mus musculus niger* Bechstein, *loc. cit.* Thuringia.
1856. *Mus musculus* var. *nudo-plicatus* Gaskoin, P.Z.S. 38. Taplow, Buckinghamshire, England.
1867. *Mus musculus varius* Fitzinger, S.B. Akad. Wiss. Wien. *56, 1*: 70. Europe.
1867. *Mus musculus cinereo-maculatus* Fitzinger, *loc. cit.* Europe.
1868. *Mus musculus* var. *melanogaster* Mina Palumbo, Ann. Agric. Sicil. xii, 70. Low country of Le Madonie, Sicily. (*N.V.*)
1868. *Mus musculus* var. *rubicundus* Mina Palumbo, *loc. cit.* (*N.V.*)
1868. *Mus musculus* var. *albinus* Mina Palumbo, *loc. cit.* (*N.V.*) On the last three names see Miller, *1913*, Proc. Biol. Soc. Washington, *26:* 81.
1869. *Mus poschiavinus* Fatio, Faune Vert. Suisse, *1:* 207. Poschiavo, Grisons, Switzerland.
1872. *Mus musculus flavescens* Fischer, Zool. Garten, *13:* 223. Berlin, Germany.
1899. *Mus muralis* Barrett-Hamilton, P.Z.S. 81. Island of St. Kilda, Outer Hebrides.
1904. *Mus musculus faeroensis* Clarke, Proc. Roy. Phys. Soc. Edinburgh, *15*, 2: 163. Naalsoe, Faeroe Islands.
1921. *Mus* (*Mus*) *musculus jamesoni* Krausse, Arch. Nat. Berlin, *87*, 6: 40. North Bull Island, Dublin Bay, Ireland.
1921. *Mus musculus airolensis* Burg, Der Weidmann Bulach, No. 6, 5. Upper Tessin Valleys. (*N.V.*)
(?) 1923. *Mus musculus helveticus* Burg, Zool. Palaearctica, Dresden, *1*, 4: 167. High altitudes of Switzerland. (*N.V.*)
(?) 1923. *Mus musculus albidiventris* Burg, Palaearctica, Dresden, *1*, 4: 167. Bergell, Switzerland. (*N.V.*) Not of Blyth, 1852.
1928. *Mus musculus subcaerulus* Fritsche, Z. Säuget. *3:* 307. Malse, near Appeln, Bremerhaven, North Germany. Not of Lesson, 1842.
1930. *Mus* (*Mus*) *musculus formosovi* Heptner, Zool. Anz. *89:* 5. Daghestan, Caucasus (Aul Kurusch, Samurski district, 8,000 ft.)
1934. *Mus hortulanus caudatus* Martino, Zap. Russk. Nauch. Inst. Belgrad, *10:* 85. Bistra Mountains, Macedonia, Southern Yugoslavia.
1940. *Mus musculus mykinessiensis* Degerbol, Mammalia in Zoology of the Faeroes, *3*, 2: 11. Myggenaes, Faeroe Islands.
1943. *Mus musculus subterraneus* (Montessus, 1899), Schwarz & Schwarz, J. Mamm. *24:* 65.
1943. *Mus musculus ater* (Fraipont, 1907), Schwarz & Schwarz, J. Mamm. *24:* 65.

We are unable to trace earlier references to the last two names than those given here.

Range: Northern Spain, France except Mediterranean littoral, Channel Isles, British Isles including Orkneys, Shetlands, also Hebrides, Faeroes, Iceland, coastal Norway, Germany as far as Elbe River, Switzerland, west and south parts of Balkans, Ionian Islands and islands of Ægean archipelago; an introduced population along pipeline between Batum and Baku, Transcaucasia (Schwarz & Schwarz).

MUS MUSCULUS PRAETEXTUS Brants, 1827

1827. *Mus praetextus* Brants, Gesl. der Muizen, 125. Syria.
1827. *Mus gentilis* Brants, Gesl. der Muizen, 126. Southern Egypt.
1867. *Mus reboudia* Loche, Explor. Sci. Alger. Zool. Mamm. 117. Oasis of Messad, Algeria.
1937. *Mus musculus candidus* Laurent, Bull. Soc. Sci. Nat. Maroc. *17:* 1. Berguent, Eastern Morocco. Not of Bechstein, 1796.

Range: Western Persia, Iraq, Northern Arabia, Syria, Palestine, North Africa, Abyssinia, Nile Valley to Khartoum, Cyprus, Rhodes. (Outdoor type.)

MUS MUSCULUS BREVIROSTRIS Waterhouse, 1837

1837. *Mus brevirostris* Waterhouse, P.Z.S. 19. (Maldonado, Uruguay, South America).
1837. *Mus abbotti* Waterhouse, P.Z.S. 77. Trebizond, Asia Minor.
1845. *Mus azoricus* Schinz, Synops. Mamm. *2:* 161. Azore Islands, Atlantic.
1855. *Musculus mollissimus* Dehne, Allgem. Deutsche Nat. Zeitschr. Dresden, *1:* 443. Monte Pollino, Basilicata, Italy.
1896. *Mus musculus flavescens* Barrett-Hamilton, Zoologist, *20:* 179. Not of Fischer, 1872.
1920. *Mus spicilegus caoccii* Krausse, Arch. Nat. Berlin, *85:* 95. Sardinia.
1921. *Mus musculus far* Cabrera, Mem. Real. Soc. Esp. H.N. Tomo del 50th anniv. 46. Mogador, Morocco.

Range: Italy, Mediterranean region, France, Spain, Mediterranean islands as far east as Crete, introduced into Asia Minor, coastal towns of North and North-West Africa, etc., Azores, Madeira, Canary Islands, southern U.S.A., Central and South America (Schwarz & Schwarz).

MUS MUSCULUS CASTANEUS Waterhouse, 1843

1843. *Mus castaneus* Waterhouse, Ann. Mag. N.H. *12:* 134. Philippine Islands.
1852. *Mus manei* Kelaart, Fauna Zeyl. 64. Ceylon. (Gray, *1843*, List Mamm. 111, *nom. nud.*)
1865. *Mus rama* Blyth, J. Asiat. Soc. Bengal, *34:* 194. Penang.
1922. *Mus musculus sinicus* Cabrera, Bol. Real. Soc. Esp. H.N. *22:* 166. Ningpo, Chekiang, Southern China.

Range: Ceylon, Indian Peninsula, Assam, Burma, Siam, Malay States, coastal South-Eastern China, all islands of Malay Archipelago, New Guinea, Polynesia. East and South Africa.

MUS MUSCULUS MOLOSSINUS Temminck, 1845

1845. *Mus molossinus* Temminck, Fauna Japon. Mamm. 51, pl. 15, figs. 2–4. Japan.
1911. *Mus wagneri rotans* Fortuyn, De cytoarchitect. der groote hersenschors van eenige knaagdiern, Amsterdam, 169. (M.T.) Japan.
1924. *Mus kurilensis* Kuroda, J. Mamm. *5:* 119. Shimoshiri, Central Kurile Islands.
1924. *Mus molossinus orii* Kuroda, New Mamm. Riukiu Islands, Tokyo, 7. Nishinoomote, Tanegashima, south of Japan.
1924. *Mus molossinus yonakuni* Kuroda, New Mamm. Riukiu Islands, Tokyo, 8. Yonakuntjima, Liukiu Islands.
1931. *Mus kambei* Kishida & Mori, Dobuts Zasshi. *43:* 378, *nom. nud.*
1931. *Mus tagakii* Kishida & Mori, *loc. cit.*, *nom. nud.*

1934. *Mus bactrianus yamashinai* Kuroda, J. Mamm. *15:* 234. Moppo, Southern Korea.
(?) 1939. *Mus batrianus* (sic) *longicauda* Mori, Rep. First Exp. Manchoukuo, *5*, 2, 4: 76. Chaoyang, Jehol, North-Eastern China.
1940. *Mus molossinus kuro* Kuroda, Monogr. Jap. Mamm. 277. Japan.
(?) 1943. *Mus musculus albula* (Minouchi, 1928) Schwarz & Schwarz, J. Mamm. *43:* 68. We are unable to trace an earlier reference.

Range: Japanese, Kurile, and Iki Islands, including Tanegashima, Yakushima, Yonakuni, Shikoko and Quelpart I., Korea. (Outdoor type.)

Mus musculus homourus Hodgson, 1845

1845. *Mus homoourus* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
1841. *Musculus nipalensis* Hodgson, J. Asiat. Soc. Bengal, *10:* 915, *nom. nud.*
1849. *Mus darjilingensis* Hodgson, Ann. Mag. N.H. *3:* 203.
1878. *Mus kakhyensis* Anderson, Zool. Res. W. Yunnan, 307. Ponsee, Kakhyen Hills, Western Yunnan, China.
1925. *Mus formosanus* Kuroda, Dobuts. Zasshi, *37*, 435: 16. Taihoku, Formosa.
1927. *Mus bactrianus tantillus* G. Allen, Amer. Mus. Nov. 270, 9. Wanhsien, Szechuan, China.
1929. *Mus musculus taiwanus* Horikawa, Trans. N.H. Soc. Formosa, *19*, 100: 80. Northern Formosa.

Range: southern slope Himalayas, from roughly Indus River to Burma, Formosa, Siam, Indo-China, Southern China; Nilgiri Hills, India; Java. (But not Liukiu Islands as stated by Schwarz & Schwarz). (Outdoor type.)

Mus musculus urbanus Hodgson, 1845

1845. *Mus urbanus* Hodgson, Ann. Mag. N.H. *15:* 269. Katmandu, Nepal.
1845. *Mus dubius* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal. Not of Fischer, 1829.
1878. *Mus viculorum* Anderson, Zool. Yunnan, 308. Ponsee, Western Yunnan.

Range: Eastern Himalayas, and plains of Northern India and South-Western China (Yunnan, Szechuan, Kweichow). (Indoor type.)

Mus musculus bactrianus Blyth, 1846

1846. *Mus bactrianus* Blyth, J. Asiat. Soc. Bengal, *15:* 140. Kandahar, Afghanistan.
1853. *Mus gerbillinus* Blyth, J. Asiat. Soc. Bengal, *22:* 410. Punjab.
1853. *Mus theobaldi* Blyth, J. Asiat. Soc. Bengal, *22:* 583. Punjab.
1919. *Mus gentilulus* Thomas, J. Bombay N.H. Soc. *26*, 2: 421. Lahej, near Aden, Southern Arabia.

Range: Persia, Afghanistan, to Kashmir, Punjab, Baluchistan, Sind, and Aden district. (Outdoor type.)

Mus musculus wagneri Eversmann, 1848

1848. *Mus wagneri* Eversmann, Bull. Nat. Moscou, *1:* 191. Kamysh-Samarian Lakes, between Lower Volga and Ural Rivers.
1873. *Mus major* Severtzov, Mem. Soc. Amis. Sci. Moscow, *8:* 61 tab. Not of Pallas, 1779, nor Brants, 1827.
1875. *Mus pachycercus* Blanford, J. Asiat. Soc. Bengal, *2:* 108. Plains of Eastern Turkestan.

MUS MUSCULUS WAGNERI [*contd.*]

1889. *Mus musculus bicolor* Tichomirow & Kortchagin, Bull. Soc. Amis. Sci. Nat. Moscou, *56*, 4: 26. Kirghiz Steppe.
1903. *Mus* (*Leggada*) *gansuensis* Satunin, Ann. Mus. St. Pétersb. *7:* 564. Tschortentan Temple, Kansu, China.
1908. *Mus wagneri mongolium* Thomas, P.Z.S. 106. Tabool, about 100 miles north-west of Kalgan, Mongolia.
1922. *Mus oxyrrhinus* Kashkarov, Trav. Univ. Stat. Turkestan, Lib. 3, 25. Golodnaya Steppe (U.S.S.R.) (*N.V.*)
1925. *Mus severtzovi* Kashkarov, Trans. Sci. Soc. Turkestan, Tashkent, *2:* 55. Tashkent, Russian Turkestan.
1932. *Mus musculus decolor* Argyropulo, Trav. Inst. Zool. Acad. Sci. U.R.S.S. 226. Almatinsk, Semirechyia, Russian Turkestan.
1943. *Mus musculus bieni* (Young, 1934), Schwarz & Schwarz, J. Mamm. *24:* 60. We are unable to find an earlier reference than the one given.

Range: Central Asia from east bank of Volga to Yellow Sea (Eastern China); northernmost record is Bogdo-ola Mountains, Zungaria; southernmost record is in Persia. (Schwarz & Schwarz.) (Wild race.)

MUS MUSCULUS VIGNAUDI Demurs & Prevost, 1850

1850. *Mus vignaudii* Demurs & Prevost in Lefebvres Voy. en Abyssinie, Atlas, Zool. pl. 5. Abyssinia.
1826. *Mus orientalis* Cretzschmar, Rüppells Atlas z.d. Reise im nördl. Afr. 76, pl. 30a. Egypt. Not *Mus orientalis* Desmarest, 1819, Nouv. Dict. H.N. ed. 2, *29:* 59, which is *Mus striatus* Linnaeus (*Lemniscomys*).

Range: Delta of Nile, Lower Egypt (Schwarz & Schwarz, under name *orientalis*).

MUS MUSCULUS TYTLERI Blyth, 1859

1859. *Mus tytleri* Blyth, J. Asiat. Soc. Bengal, *28:* 296. Dehra Dun, Himalayan Terai, United Provinces, India. Range: west half of Indian plains, east of Indus. (Indoor type.)

MUS MUSCULUS SPICILEGUS Petenyi, 1882

1882. *Mus spicilegus* Petenyi, Termeszetrajzi Fuzetek, Budapest, *5:* 114. Hungary. The following alternative names were proposed by Petenyi in the same paper, 114: *Mus acervator*, *Mus acervifex*, *Mus canicularius*, *Mus caniculator.*
1927. *Mus sergii* Valch, Trav. Soc. Nat. Charkov, *50*, 2: 49. Ukraine, Russia.

Range: west of Volga in Southern and Central Russia, Bulgaria, Rumania, Hungary. Regarded as a wild race by Schwarz & Schwarz.

MUS MUSCULUS SPRETUS Lataste, 1883

1883. *Mus spretus* Lataste, Act. Linn. Soc. Bordeaux, *7*, 4: 27. Oued Magra, north of Hodna, Algeria.
1909. *Mus spicilegus hispanicus* Miller, Ann. Mag. N.H. *3:* 421. Silos, Burgos, Spain.
1909. *Mus spicilegus lusitanicus* Miller, Ann. Mag. N.H. *3:* 422. Cintra, Portugal.
1911. *Mus spicilegus maghrebinus* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *11:* 555. Taguidert, Morocco.
1923. *Mus spicilegus lynesi* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *23:* 430. Tarzarot, Yebala, North-Eastern Morocco.

1923. *Mus spicilegus rifensis* Cabrera, Bol. Real. Soc. Esp. H.N. Madrid, *23:* 431. Melilla, Eastern Rif, Morocco.
Range: Iberian Peninsula, France immediately north of Pyrenees, North-West Africa, north of Atlas Mountains, as far east as North-Eastern Algeria, Balearic Islands. (Wild race.)

Mus musculus manchu Thomas, 1909
1909. *Mus wagneri manchu* Thomas, Ann. Mag. N.H. *4:* 502. Chu Chia Tai, Kirin Province, Manchuria.
1928. *Mus molossinus yesonis* Kuroda, J. Mamm. *9:* 147. Uinai, Iburi, Hokkaido, Japan.
1938. *Mus molossinus* var. *takayamai* Kuroda, List Jap. Mamm. Tokyo, 72. Shimauchi-mura, Higashi-Chikumagun, Pref. Nagano, Hondo, Japan.
Range: South-Eastern Manchuria, Kiushiu, Hondo, and Hokkaido in Japan. (Wild race.)

Mus booduga Gray, 1837 Little Indian Field Mouse

Approximate distribution of species: Mid-Burma, Kumaon, Punjab, Cutch, Gujerat, Kathiawar, Bihar and Orissa, Central Provinces, Nimar, Berar, Poona, Satara district, Dharwar district, Bellary, Mysore, Coorg, Nilgiri Hills, Eastern Ghats, etc., in India.

Mus booduga booduga Gray, 1837
1837. *Leggada booduga* Gray, Charlesworths Mag. N.H *1:* 586. Southern Mahratta country, India.
1839. *Mus lepidus* Elliot, Madras J. Litt. Sci. *10:* 216. Southern Mahratta country.
1851. *Mus terricolor* Blyth, J. Asiat. Soc. Bengal, *20:* 172. Southern India.
1852. *Mus albidiventris* Blyth, J. Asiat. Soc. Bengal, *21:* 351. Near Calcutta.
1866. *Mus beavanii* Peters, P.Z.S. *21:* 559. Manbhoum, India.
1912. *Leggada dunni* Wroughton, J. Bombay N.H. Soc. *21:* 339. Ambala, 900 ft., Punjab.
Range: as above, except Mid-Burma.

Mus booduga lepidoides Fry, 1931
1931. *Leggada lepidoides* Fry, J. Bombay N.H. Soc. *34:* 921. Mt. Popa, Burma.

Mus cervicolor Hodgson, 1845 Fawn-coloured Mouse

Approximate distribution of species: Ceylon, Southern India, north to Rajputana, Gujerat, Central Provinces, Nepal, Assam, Burma, Liukiu Islands, Indo-China, Siam.

Mus cervicolor cervicolor Hodgson, 1845
1845. *Mus cervicolor* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
1845. *Mus strophiatus* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
(?) 1855. *Mus cunicularis* Blyth, J. Asiat. Soc. Bengal, *24:* 721. Cherrapunji, Khasi Hills, Assam.
Range: Nepal.

Mus cervicolor fulvidiventris Blyth, 1852

1852. *Mus fulvidiventris* Blyth, J. Asiat. Soc. Bengal, *21:* 351. Trincomali, Ceylon.

Mus cervicolor nitidulus Blyth, 1859

1859. *Mus nitidulus* Blyth, J. Asiat. Soc. Bengal, *28:* 294. Schwegyin, Burma. Range: specimens examined from Kin, Mandalay, and south-east of Pegu, Burma.

Mus cervicolor caroli Bonhote, 1902

1902. *Mus caroli* Bonhote, Nov. Zool. *9:* 627. Okinawa Island, Liukiu Islands. (Apparently not a form of *Mus musculus.*)

Mus cervicolor phillipsi Wroughton, 1912

1912. *Mus phillipsi* Wroughton, J. Bombay N.H. Soc. *21:* 772. Asirgarh, Nimar, Central Provinces, 1,500 ft., India.

1913. *Leggadda* (sic) *surkha* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 17. Vijayanagar, Bellary, India.

Range: Rajputana, Gujerat, Nimar, Berar, Bellary, Cuddapah and Salem district, India. A distinct race, possibly a species.

Mus cervicolor thai Kloss, 1917

1917. *Tautatus thai* Kloss, J.N.H. Soc. Siam, *2:* 280. Raheng, Siam.

Mus cervicolor nagarum Thomas, 1921

1921. *Leggada nagarum* Thomas, J. Bombay N.H. Soc. *27,* 3: 597. Gologhat, 300 ft., Naga Hills, Assam. Range includes Jaintia and Khasi Hills, Mishmi, Kamrup, and Bhutan Duars specimens probably belong to this race.

Mus cervicolor annamensis Robinson & Kloss, 1922

1922. *Tautatus thai annamensis* Robinson & Kloss, Ann. Mag. N.H. *9:* 99. Dalat, Langbian Plateau, Annam, 4,500 ft., Indo-China.

Mus cervicolor palnica Thomas, 1923

1923. *Leggada palnica* Thomas, J. Bombay N.H. Soc. *29,* 1: 87. Shambagama, Palni Hills, 6,000 ft., Southern India. Range: Mysore, Coorg, Nilgiri and Palni Hills, Southern India.

Mus famulus Bonhote, 1898

Approximate distribution of species, as here understood: Nilgiri Hills, India, also Manipur, Assam, Burma, Yunnan, and apparently Siam.

Mus famulus famulus Bonhote, 1898

1898. *Mus famulus* Bonhote, J. Bombay N.H. Soc. *12:* 99. Coonoor, Nilgiri Hills, 5,000 ft., Southern India.

Mus famulus cooki Ryley, 1914

1914. *Mus cookii* Ryley, J. Bombay N.H. Soc. *22:* 664. Gokteik, Shan States, 2, 133 ft., Burma. Range: Naga Hills, Assam; Manipur; Western Burma, and Shan States; to Yunnan (G. Allen).

Distinct from the last. Perhaps a species, with those below as races.

Mus famulus popaeus Thomas, 1919

1919. *Leggada nitidula popaea* Thomas, J. Bombay N.H. Soc. *26*, 2: 420. Mt. Popa, dry zone of Burma. Ranges north-eastwards to Bhamo.

Mus famulus rahengis Kloss, 1920

1920. *Leggada rahengis* Kloss, J.N.H. Soc. Siam, *4*, 2: 61. Metaw, 40 miles north-west of Raheng, 1,500 ft., Siam.

Mus famulus meator G. Allen, 1927

1927. *Leggada cookii meator* G. Allen, Amer. Mus. Nov. 270, 6. Taipingpu (Shweli River, 8,000 ft.), Yunnan, China.

Mus platythrix Bennett, 1832 Indian Brown Spiny Mouse

Approximate distribution of species: Peninsular India (south to Travancore), northwards to Sind, Kathiawar, Cutch, Punjab, Kumaon. Mid-Burma.

Mus platythrix platythrix Bennett, 1832

1832. *Mus platythrix* Bennett, P.Z.S. 121. "Dukhun", Deccan, Peninsular India.
1839. *Mus saxicola* Elliot, Madras J. Litt. Sci. *10:* 215. Madras.
1854. *Mus spinulosus* Blyth, J. Asiat. Soc. Bengal, *23:* 734. Punjab.
Range: Punjab, Hoshangabad, Berar, Nimar, Poona, Bombay Presidency (many localities), Mysore, Nilgiri Hills, Madras, Travancore (part), India.

Mus platythrix ramnadensis Bentham, 1908

1908. *Mus* (*Leggada*) *ramnadensis* Bentham, Rec. Ind. Mus. *2*: 385. Ramnad, Madura, Madras, India.
1913. *Leggada siva* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 242. Sivasamudram, Southern Mysore, 2,500 ft., India.
Range: Southern Madras, Eastern Ghats, Southern Mysore, etc., in Southern India.

Mus platythrix sadhu Wroughton, 1911

1911. *Leggada platythrix sadhu* Wroughton, J. Bombay N.H. Soc. *20*: 1001. Virawah, Sind, India.
1912. *Leggada cinderella* Wroughton, J. Bombay N.H. Soc. *21:* 770. Bhuj, Cutch, India.
(1911. *Pyromys priestlyi* Thomas, J. Bombay N.H. Soc. *20*, 4: 996, based on a skin (of this race?) mixed with skull of *Millardia gleadowi*; Virawah, Sind.)
Range: Lahore district (Punjab), Sind, Rajputana, Cutch and Kathiawar, India.

Mus platythrix bahadur Wroughton & Ryley, 1913

1913. *Leggada bahadur* Wroughton & Ryley, J. Bombay N.H. Soc. *22:* 18. Karwar, Kanara district, India.
1913. *Leggada grahami* Ryley, J. Bombay N.H. Soc. *22:* 434. Wotekolli, Southern Coorg, 2,000 ft., India.
1913. *Leggada hannyngtoni* Ryley, J. Bombay N.H. Soc. *22:* 435. Makut, 250 ft., Southern Coorg.
Range: as above.

MUS PLATYTHRIX SHORTRIDGEI Thomas, 1914

1914. *Leggadilla shortridgei* Thomas, J. Bombay N.H. Soc. *23*, 1: 30. Mt. Popa, Burma. Range: including Pagan and Mingun, Mt. Popa district, Mid-Burma.

MUS PLATYTHRIX GURKHA Thomas, 1914

1914. *Leggadilla gurkha* Thomas, J. Bombay N.H. Soc. *23*, 2: 200. Jerna, Ramnagar, Kumaon, 1,500 ft., Northern India. Range includes Bihar.

Mus fernandoni Phillips, 1932

Approximate distribution of species: Ceylon.

MUS FERNANDONI Phillips, 1932

1932. *Leggadilla fernandoni* Phillips, Spolia Zeylan, *16:* 325. Kumbalgamuwa, Central Province, 3,000 ft., Ceylon.

Subgenus *COELOMYS* Thomas, 1915

As here understood, based on species with palatal foramina shorter than in the typical subgenus.

Mus pahari Thomas, 1916 Sikkim Mouse

Approximate distribution of species: Sikkim, Assam, Burma, Siam, Indo-China, and in all probability Java. (*Mycteromys crociduroides vulcani* Robinson & Kloss, 1919, Java, is much more like this species than typical *crociduroides* from Sumatra.)

MUS PAHARI PAHARI Thomas, 1916

1916. *Mus pahari* Thomas, J. Bombay N.H. Soc. *24*, 3: 415. Batasia, Sikkim, 6,000 ft., India. Range: Sikkim, Naga Hills in Assam, Northern Burma.

MUS PAHARI GAIRDNERI Kloss, 1920

1920. *Leggada pahari gairdneri* Kloss, J.N.H. Soc. Siam, *4:* 60. Me-taw, 40 miles north-west of Raheng, 1,500 ft., Siam. Range includes Tonkin, Annam, and Laos, Indo-China.

MUS PAHARI JACKSONIAE Thomas, 1921

1921. *Leggada jacksoniae* Thomas, J. Bombay N.H. Soc. *27*, 3: 596. Laitkynsao, Khasi Hills, Assam. Range: Garo, Khasi, Jaintia Hills, Mokokchung in Naga Hills (all Assam), Mishmi, Northern Burma in part, and probably Manipur (a similar specimen recently received in B.M. representing this or typical race).

Mus mayori Thomas, 1915 Mayor's Mouse

Approximate distribution of species: Ceylon.

Mus mayori mayori Thomas, 1915

1915. *Coelomys mayori* Thomas, J. Bombay N.H. Soc. *23*, 3: 416. Pattipola, 6,120 ft., Central Ceylon.

Mus mayori pococki Ellerman, 1947

1947. *Mus mayori pococki* Ellerman, J. Mamm. *28:* 382. To replace:
1915. *Coelomys bicolor* Thomas, J. Bombay N.H. Soc. *24*, 1: 49. Not of Tichomirow & Kortchagin, 1889. Kottawa, 250 ft., Southern Province, Ceylon.

Genus **CHIROMYSCUS** Thomas, 1925

1925. *Chiromyscus* Thomas, P.Z.S. 503. *Mus chiropus* Thomas.

1 species: *Chiromyscus chiropus*, page 613

Chiromyscus chiropus Thomas, 1891. Fea's Tree Rat

Approximate distribution of species: Indo-China, westwards just into Burma.

Chiromyscus chiropus Thomas, 1891

1891. *Mus chiropus* Thomas, Ann. Mus. Civ. Stor. Nat. Genova, *10:* 884. Karin Hills, Eastern Burma. Range includes Tonkin, Laos, and Annam, Indo-China.

Genus **DIOMYS** Thomas, 1917

1917. *Diomys* Thomas, J. Bombay N.H. Soc. *25*, 2: 203. *Diomys crumpi* Thomas.

See also Ellerman, 1946, *Ann. Mag. N.H. 13:* 204–206, for external characters.

1 species: *Diomys crumpi*, page 613

Diomys crumpi Thomas, 1917 Crump's Mouse

Approximate distribution of species: India; several specimens in British Museum from Bishenpur in Manipur. Type skull from Paresnath, Bihar.

Diomys crumpi Thomas, 1917

1917. *Diomys crumpi* Thomas, J. Bombay N.H. Soc. *25*, 2: 204. Paresnath, Hazaribagh, Bihar, India. Range includes Manipur.

Genus **GOLUNDA** Gray, 1837

1837. *Golunda* Gray, Charlesworths Mag. N.H. *1:* 586. *Golunda ellioti* Gray.

1 species: *Golunda ellioti*, page 614

Golunda ellioti Gray, 1837 Indian Bush Rat

Approximate distribution of species: Ceylon, Peninsular India northwards to Cutch, Sind, North-West Frontier, Punjab, Nepal, Bhutan Duars and Kamrup.

GOLUNDA ELLIOTI ELLIOTI Gray, 1837

1837. *Golunda ellioti* Gray, Charlesworths Mag. N.H. *1:* 586. Dharwar, India.
1839. *Mus hirsutus* Elliot, Madras J. Litt. Sci. *10:* 213. Southern Mahratta country.
(?) 1850. *Golunda coffaeus* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 213. Ceylon.
1923. *Golunda ellioti bombax* Thomas, J. Bombay N.H. Soc. *29:* 375. Andheri, Salsette Island, Bombay, India.
1923. *Golunda ellioti coraginis* Thomas, J. Bombay N.H. Soc. *29:* 375. Wotekolli, Coorg, 2,000 ft., India.

Range: Ceylon (part), Eastern Ghats, Coorg, Mysore, Bombay Presidency, Central Provinces, Gwalior, Hazaribagh, etc., India.

GOLUNDA ELLIOTI MYOTHRIX Hodgson, 1845

1845. *Mus myothrix* Hodgson, Ann. Mag. N.H. *15:* 267. Kahulia Powa, Nepal.

Range: to Kumaon, Punjab.

GOLUNDA ELLIOTI NUWARA Kelaart, 1850

1850. *Mus newara* Kelaart, J. Ceylon Br. Asiat. Soc. *2:* 213. Nuwara Eliya, Ceylon.
1887. *Mus nuwara* Kelaart, *loc. cit.* 327. (Emendation, in reprint of the 1850 publication.)
1891. *Golunda newera* Blanford, Fauna Brit. India, Mamm. *2:* 427.

GOLUNDA ELLIOTI WATSONI Blanford, 1876

1876. *Pelomys watsoni* Blanford, Proc. Asiat. Soc. Bengal, 181. Kirthar Range, Sind.
(?) 1923. *Golunda ellioti limitaris* Thomas, J. Bombay N.H. Soc. *29:* 373. Eleven miles west of Kohat, North-West Frontier, 2,200 ft., India.

Range: known from several localities in Sind, and one specimen from North-West Frontier.

GOLUNDA ELLIOTI PAUPERA Thomas, 1923

1923. *Golunda ellioti paupera* Thomas, J. Bombay N.H. Soc. *29*, 2: 374. Handisera, near Ambala, Punjab, 500 ft., India.

GOLUNDA ELLIOTI GUJERATI Thomas, 1923

1923. *Golunda ellioti gujerati* Thomas, J. Bombay N.H. Soc. *29*, 2: 374. Lunwa, Palanpur, Gujerat, 150 ft., India. Range: Cutch, Rajputana, Gujerat, Kathiawar. The most doubtful race retained in this species; near the typical; all forms of this species might well be considered synonyms of *ellioti*, except perhaps *newara*.

GOLUNDA ELLIOTI COENOSA Thomas, 1923

1923. *Golunda ellioti coenosa* Thomas, J. Bombay N.H. Soc. *29*, 2: 376. Hasimara, Bhutan Duars, 300 ft., India. Range: Bhutan Duars, and Kamrup (North-Western Assam).

Genus **ACOMYS** Geoffroy, 1838

1838. *Acomys* Geoffroy, Ann. Sci. Nat. Paris, Zool. *10*: 126. *Mus cahirinus* Desmarest.
1841. *Acosminthus* Gloger. Gemeinn. Hand u. Hilfsbuch der Nat. *1:* 95. *Mus dimidiatus* Cretzschmar.
1842. *Acanthomys* Lesson, Nouv. Tabl. Regn. Anim. Mamm. 135. *Mus hispidus* Brants = *Mus dimidiatus* Cretzschmar (Miller, 1912, Cat. Mamm. Western Europe, 883).

2 species in the area covered by this list:

Acomys cahirinus, page 615
Acomys russatus, page 616

The view is here taken that *A. cahirinus* is a smallish commensal form of the wild *A. dimidiatus* (which it antedates).

Acomys cahirinus Desmarest, 1819 — Cairo Spiny Mouse

Approximate distribution of species: Western Sind (India), Southern Persia, Palestine, Arabia south to Aden district, Islands of Cyprus and Crete, Egypt, Libya, Algeria in part, Sudan, south in all probability through northern West Africa, and East Africa to Southern Rhodesia, as there is little evidence that the majority of the so-called Tropical African species are distinct.

Acomys cahirinus cahirinus Desmarest, 1819

1819. *Mus cahirinus* Desmarest, Nouv. Dict. H.N. *29:* 70. Cairo, Egypt.
(?) 1922. *Acomys sabryi* Kershaw, Ann. Mag. N.H. *10:* 107. Helwan, Egypt.
Range: Egypt, also recorded from Palestine. Probably a commensal form.

Acomys cahirinus dimidiatus Cretzschmar, 1826

1826. *Mus dimidiatus* Cretzschmar, Rüppell Atlas, 37, taf. 13, fig. a. Sinai.
(?) 1827. *Mus hispidus* Brants, Gesl. der Muizen, 154. Arabia.
1829. *Mus megalotis* Lichtenstein, Darstell. Säugeth. pl. 37, fig. 2. Arabia.
Range: Arabia, except extreme south, Palestine, Persia (Chahabar, on south coast).

Acomys cahirinus hunteri de Winton, 1901

1901. *Acomys hunteri* de Winton, Nov. Zool. *8:* 401. Tokar, near Suakin, Red Sea Province of Sudan. Range: northwards to East Egyptian Desert, Southern Egypt; specimens in B.M.

Acomys cahirinus viator Thomas, 1902

1902. *Acomys viator* Thomas, P.Z.S. *2:* 10. Wadi Sultan, near Sokna, Libya.

Acomys cahirinus nesiotes Bate, 1903

1903. *Acomys nesiotes* Bate, Ann. Mag. N.H. *11:* 565. Kernyia Hills, village of Dikomo, Island of Cyprus.

Acomys cahirinus minous Bate, 1906

1906. *Acomys dimidiatus minous* Bate, P.Z.S. *1905*, 2: 321. Kanea, Island of Crete.

Acomys cahirinus chudeaui Kollman, 1911

1911. *Acomys chudeaui* Kollman, Bull. Mus. H.N. Paris, 402. Atar, approximately 21° N., 13° W., Mauretania.

Acomys cahirinus flavidus Thomas, 1917

1917. *Acomys flavidus* Thomas, J. Bombay N.H. Soc. *25*, 2: 205. Laki Hills, Sehwan, Sind, Western India.

Acomys cahirinus homericus Thomas, 1923

1923. *Acomys dimidiatus homericus* Thomas, Ann. Mag. N.H. *12:* 173. El Khaur, Aden district, Southern Arabia. Range: known from a few localities near Aden.

Acomys cahirinus seurati Heim de Balsac, 1936

1936. *Acomys seurati* Heim de Balsac, Suppl. Bull. Biol. de France et de Belgique, Paris, *21*: 356, fig. 6, no. 4; 389, fig. 15; Bull. Soc. Zool. France, *1937*, *62*, 5: 332. Iniker, Ahaggar, Southern Algeria.

Acomys russatus Wagner, 1840 — Golden Spiny Mouse

Approximate distribution of species: Egypt, Sinai, Palestine, Arabia. Soles of hands and feet black, not pale (compare *cahirinus* races).

Acomys russatus Wagner, 1840

1840. *Mus russatus* Wagner, Abh. Bayer Akad. Wiss. *3:* 195, pl. 3, fig. 2. (This work dates from 1840, not 1843 as often quoted.) Sinai.

1843. *Mus affinis* Gray, List Spec. Mamm. B.M. 108, *nom. nud.*

1912. *Acomys russatus aegyptiacus* Bonhote, Abstr. P.Z.S. 3; P.Z.S. 230. Wadi Hof, near Helwan, Egypt.

Range: as in the species above, Arabian localities include Hadhba, Najran, Shain Arjan, Taif, and Hail (Nejd).

Genus **BANDICOTA** Gray, 1873

1873. *Bandicota* Gray, Ann. Mag. N.H. *12:* 418. *Bandicota gigantea* Hardwicke = *Mus indicus* Bechstein.

1907. *Gunomys* Thomas, Ann. Mag. N.H. *20:* 203. *Arvicola bengalensis* Gray & Hardwicke.

For a key to the species and most of the races see Ellerman, 1947, *J. Mamm. 28:* 365–367. On p. 365, this key should be emended to read "327. (348). Incisors proodont, *or base of skull so lengthened* that the condylobasal length is normally about equal to occipitonasal length" (etc.).

The few exceptions noted in the key to the statement that in *Bandicota indica* the condylobasal normally equals or exceeds the occipitonasal length should always be distinguishable from *Rattus* species by their more elongated palate.

2 species: *Bandicota bengalensis*, page 617
Bandicota indica, page 618

Bandicota bengalensis Gray, 1835 — Lesser Bandicoot Rat, "Indian Mole Rat"

Approximate distribution of species: Ceylon and Peninsular India northwards to Kathiawar, Sind, Punjab, Kashmir, thence to Nepal, Assam, and Burma. Penang Island, Sumatra, Java.

Bandicota bengalensis bengalensis Gray, 1835

1835. *Arvicola bengalensis* Gray, Illustr. Ind. Zool. *2*, pl. 21. Bengal.
1855. *Mus tarayensis* Horsfield, Ann. Mag. N.H. *16:* 112. Nepal.
1855. *Mus plurimammis* Horsfield, Ann. Mag. N.H. *16:* 112. Nepal.
1855. *Mus morungensis* Horsfield, Ann. Mag. N.H. *16:* 112. Nepal.
1878. *Mus* (*Nesokia*) *blythianus* Anderson, J. Asiat. Soc. Bengal, *47*, 2: 227. Bengal.
1878. *Mus* (*Nesokia*) *barclayanus* Anderson, J. Asiat. Soc. Bengal, *47*, 2: 229. Guna, Central India.

Range: Burma west of Chindwin, Assam, Bhutan Duars, Sikkim, Nepal, Calcutta, Bihar and Orissa, Bengal, Gwalior, Central India.

Bandicota bengalensis kok Gray, 1837

1837. *Mus kok* Gray, Charlesworths Mag. N.H. *1:* 585. Dharwar, India.
1839. *Mus* (*Neotoma*) *providens* Elliot, Madras Journ. *10:* 209. Southern Mahratta country, India.
1854. *Mus daccaensis* Tytler, Ann. Mag. N.H. *14:* 173. Deccan, India.
1908. *Gunomys lordi* Wroughton, J. Bombay N.H. Soc. *18:* 746. Kolaba district, Konkan, Bombay, India.
1908. *Gunomys sindicus* Wroughton, J. Bombay N.H. Soc. *18:* 746. Pithoro, Central Sind Desert.

Range: Punjab, Sind, Kathiawar, southwards almost throughout Peninsula of India, to Travancore.

Bandicota bengalensis gracilis Nehring, 1902

1902. *Nesokia gracilis* Nehring, S.B. Ges. Nat. Fr. Berlin, 116. Ceylon.
1850. *Mus dubius* Kelaart, J. Asiat. Soc. Ceylon, *2*, 2: 319. Not of Hodgson, 1845.
(?) 1936. *Gunomys kok insularis* Phillips, Spolia Zeylan, *20:* 95. Thinney, near Jaffna, North Province, Ceylon.

Bandicota bengalensis varius Thomas, 1907

1907. *Gunomys varius* Thomas, Ann. Mag. N.H. *20:* 204. Georgetown, Penang Island, Malay Peninsula. Range: northwards to Tenasserim and Lower Burma (Prome, Toungoo district, near Pegu, etc.).

Bandicota bengalensis wardi Wroughton, 1908

1908. *Gunomys wardi* Wroughton, J. Bombay N.H. Soc. *18:* 745. Pandritton, 5,500 ft., Kashmir. Range: to Chamba, Punjab, and a few localities in Kashmir.

Bandicota indica Bechstein, 1800 Large Bandicoot Rat

Approximate distribution of species: Ceylon, Peninsular India, north to Kathiawar, Rajputana, United Provinces, Nepal, Assam, Burma; Yunnan, Formosa; Indo-China, Siam; Java, Sumatra. Partly, apparently, a commensal species, which might explain its somewhat disjointed distribution. Has been recently recorded from Hong Kong (Romer, 1947).

Bandicota indica indica Bechstein, 1800

1800. *Mus indicus* Bechstein, Ueber. Vierf. Thiere, *2:* 497. Pondicherry, India.
(?) 1800. *Mus bandicota* Bechstein, Ueber. Vierf. Thiere, *2:* 498. East coast India.
1801. *Mus malabarica* Shaw, Gen. Zool. *2:* 54. Malabar, India.
1801. *Mus perchal* Shaw, Gen. Zool. *2:* 55. India, said to be numerous about Pondicherry.
1804. *Mus giganteus* Hardwicke, Trans. Linn. Soc. London, *7:* 306. Hardwar, United Provinces, India.

Range: Hardwar and Delhi (United Provinces), Rajputana, Gujerat, Kathiawar, Orissa, Salsette Island, Bombay Presidency, Madras, Mysore, Coorg, Nilgiri Hills, Malabar and other localities in Southern India, Ceylon. Many specimens of this form have been examined, and the conclusion reached that there is only one (individually variable) subspecies in the area just listed.

Bandicota indica nemorivaga Hodgson, 1836

1836. *Mus (Rattus) nemorivagus* Hodgson, J. Asiat. Soc. Bengal, *5:* 234. Nepal.
1845. *Mus macropus* Hodgson, Ann. Mag. N.H. *15:* 268. Nepal.
1878. *Mus (Nesokia) elliotanus* Anderson, J. Asiat. Soc. Bengal, *46*, 4: 231. Calcutta.
1912. *Mus kagii* Kuroaka, J.N.H. Soc. Taiwan, *6:* 7, *nom. nud.*
1916. *Bandicota mordax* Thomas, J. Bombay N.H. Soc. *24*, 4: 642. Chiengmai, Siam.
1926. *Rattus eloquens* Kishida, "Nezumi" in Dobuts. Kyôzai no Konponteki Kenkyû, 144. Formosa. (*N.V.*)
1941. *Nesokia nemorivaga taiwanus* Tokuda, Biogeog. Tokyo, *4*, 1: 74. Taihoka, Formosa.

Range: Toungoo and Pegu districts, Burma; Khasi Hills, Assam, and Kamrup; Bhutan Duars, Calcutta, Nepal; Yunnan (Tengueh); Formosa; Siam in part. Medium-sized race (usually, not always, smaller than the typical). Normally the nasals are shorter than in the typical race.

Bandicota indica savilei Thomas, 1916

1916. *Bandicota savilei* Thomas, J. Bombay N.H. Soc. *24*, 4: 641. Mt. Popa, about 2,500 ft., Burma.
1929. *Bandicota savilei curtata* Thomas, Ann. Mag. N.H. *3:* 205. Raheng, Siam.

Range includes Pagan, Burma. Small race.

Bandicota indica siamensis Kloss, 1919

1919. *Bandicota siamensis* Kloss, J. N.H. Soc. Siam, *3:* 382. Tachin, Central Siam. (Unrepresented in British Museum. Evidently nearest the typical race.)

Bandicota indica jabouillei Thomas, 1927

1927. *Bandicota jabouillei* Thomas, P.Z.S. 54. Tourane, Annam, Indo-China. A very large form; near the typical race, and little known.

Genus **NESOKIA** Gray, 1842

1842. *Nesokia* Gray, Ann. Mag. N.H. *10:* 264. *Arvicola indica* Gray.
1860. *Spalacomys* Peters, Abh. K. Adad. Wiss. Berlin, 139. *Spalacomys indicus* Peters.
1891. *Nesocia* Blanford, Fauna Brit. India, Mamm. *2:* 421. Emendation.

1 species: *Nesokia indica*, page 619

Nesokia indica Gray, 1830 — Short-tailed Bandicoot Rat (Short-tailed "Mole-Rat")

Approximate distribution of species: Southern Russian Turkestan, from Kopet-Dag eastwards (basins of Zeravshan, Amu-Darya, Murgab and Tedzhen), Chinese Turkestan, Baluchistan, Punjab, Rajputana, Sind, Kumaon in India, Afghanistan, Persia, Iraq, Palestine, Syria, Northern Arabia, to Egypt.

Nesokia indica indica Gray, 1830

1830. *Arvicola indica* Gray, Illustr. Ind. Zool. *1*: pl. xi. "India."
1837. *Mus hardwickei* Gray, Charlesworths Mag. N.H. *1:* 585.
1851. *Nesokia griffithi* Horsfield, Cat. Mamm. Ind. Mus. 145. Pushut, North-West Frontier, India.
(?) 1860. *Spalacomys indicus* Peters, Abh. K. Akad. Wiss. Berlin, 143. Eastern India.
1907. *Nesokia bailwardi* Thomas, Ann. Mag. N.H. *20:* 199. Bunder-i-gaz, south shore Caspian Sea, Persia.
1908. *Nesokia beaba* Wroughton, J. Bombay N.H. Soc. *18:* 741. Pithoro, Central Sind Desert.

Range: Baluchistan, South Waziristan, Punjab, North-West Frontier, Sind, Delhi and Fategarh in United Provinces, Rajputana, Kumaon, Persia in part, apparently to Kopet-Dag Mountains, Kabul in Afghanistan.

Nesokia indica myosura Wagner, 1845

1845. *Meriones myosurus* Wagner, Arch. Nat. *11*, 1: 149. Syria.

Nesokia indica huttoni Blyth, 1846

1846. *Mus huttoni* Blyth, J. Asiat. Soc. Bengal, *15:* 139. Kandahar, Afghanistan.
1889. *Nesokia boettgeri* Radde & Walter, Zool. Jahrb. *4:* 1036. Amu-Darya, Transcaspia.
1899. *Nesokia huttoni satunini* Nehring, S.B. Ges. Nat. Fr. Berlin, *7:* 108. Merv, Transcaspia.
1928. *Nesokia* (*Nesokia*) *dukelskiana* Heptner, Arch. Nat. *92a*, 7: 126. Samarkand, Russian Turkestan.

Range: Baluchistan (part), Afghanistan (part), Eastern Russian Turkestan.

Nesokia indica scullyi Wood-Mason, 1876

1876. *Nesokia scullyi* Wood-Mason, Proc. Asiat. Soc. Bengal, 80. Sanju in Kashgaria, near Yarkand, Chinese Turkestan.

Nesokia indica brachyura Büchner, 1889

1889. *Nesokia brachyura* Buchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1*, Säugeth.: 82. Lob Nor, Chinese Turkestan.

Nesokia indica bacheri Nehring, 1897

1897. *Nesokia bacheri* Nehring, Zool. Anz. No. 547: 503. Ghor-el-Safieh, Palestine.

Nesokia indica suilla Thomas, 1907

1907. *Nesokia suilla* Thomas, Ann. Mag. N.H. *20:* 203. Shaluf, Suez, Egypt. Range: Lower Egypt, west to Fayum, and extreme west of the delta.

Nesokia indica buxtoni Thomas, 1919

1919. *Nesokia buxtoni* Thomas, J. Bombay N.H. Soc. *26*, 2: 422. Amara, Iraq. Range: several places in Iraq, and Oqair in Northern Arabia.

Nesokia indica legendrei Goodwin, 1939

1939. *Nesokia legendrei* Goodwin, Amer. Mus. Nov. 1048, 1. Gouladah, district of Bujnurd, 3,200 ft., Elburz, Persia.

Nesokia indica insularis Goodwin, 1940

1940. *Nesokia insularis* Goodwin, Amer. Mus. Nov. 1082, 12. East end of main Kaleh Peninsula, 80 ft. below sea level, south shore of Caspian Sea, Persia.

Subfamily Cricetinae

Genera: *Calomyscus*, page 620
Cricetulus, page 621
Cricetus, page 628
Mesocricetus, page 629
Phodopus, page 627

For general review of Palaearctic Cricetinae see Argyropulo, 1933, Z. Säuget. *8*, 3: 133.

Genus **CALOMYSCUS** Thomas, 1905

1905. *Calomyscus* Thomas, Abstr., P.Z.S. No. 24: 23. *Calomyscus bailwardi* Thomas.

1 species: *Calomyscus bailwardi*, page 620

Calomyscus bailwardi Thomas, 1905 Mouse-like Hamster

Approximate distribution of species: Kopet-Dag Mountains in Russian Turkestan, Afghanistan (see Ellerman, 1948, *P.Z.S. 118*, 3: 804), Persia and Baluchistan. Also Southern Transcaucasia according to Kuznetzov.

Calomyscus bailwardi bailwardi Thomas, 1905

1905. *Calomyscus bailwardi* Thomas, Abstr., P.Z.S. No. 24: 23; and P.Z.S. 1905, *2*: 525 (1906). Malamir, 70 miles north-east of Ahwaz, Persia.

1920. *Calomyscus baluchi* Thomas, J. Bombay N.H. Soc. *26*, 4: 939. Kelat, Baluchistan.

Range: Persia and Baluchistan (part).

Calomyscus bailwardi hotsoni Thomas, 1920

1920. *Calomyscus hotsoni* Thomas, J. Bombay N.H. Soc. *26*, 4: 939. Panjgur district, Baluchistan.

1925. *Calomyscus mystax* Kashkarov, Trans. Sci. Soc. Turkestan, *2:* 43. Great Balhan Mountains (Kopet-Dag), Transcaspia.

Calomyscus bailwardi elburzensis Goodwin, 1939

1939. *Calomyscus elburzensis* Goodwin, Amer. Mus. Nov. 1050, 1. Degermatie, Kurkhud Mountains, district of Bujnurd, 4,000 ft., Elburz Mountains, Persia.

Genus **CRICETULUS** Milne-Edwards, 1867

1867. *Cricetulus* Milne-Edwards, Ann. Sci. Nat. *7:* 376. *Cricetulus griseus* Milne-Edwards.

1903. *Urocricetus* Satunin, Ann. Mus. St. Pétersb. *7:* 573. *Urocricetus kamensis* Satunin.

1914. *Tscherskia* Ognev, Moskva Dnev. Zool. otd. obsc. liub. jest. *2:* 102. *Tscherskia albipes* Ognev = *Cricetulus triton nestor* Thomas. Valid as a subgenus.

1928. *Cansumys* G. Allen, J. Mamm. *9:* 244. *Cansumys canus* Allen. (Apparently a subspecies of *Cricetulus triton* de Winton.)

1929. *Asiocricetus* Kishida, Lansania, Tokyo, *1:* 148. *Asiocricetus bampensis* Kishida = *Cricetulus triton nestor* Thomas.

1933. *Allocricetulus* Argyropulo, Z. Säuget. *8:* 133. *Cricetus eversmanni* Brandt. Valid as a subgenus.

7 species: *Cricetulus alticola*, page 625; *Cricetulus barabensis*, page 623; *Cricetulus eversmanni*, page 626; *Cricetulus lama*, page 625; *Cricetulus longicaudatus*, page 624; *Cricetulus migratorius*, page 621; *Cricetulus triton*, page 626

Two other species were retained by Argyropulo, neither of which is well known, and neither of which is represented in London: *kamensis*, which might represent *longicaudatus*; and *kozlovi*, which G. Allen says is a form of *barabensis* (although he had not examined specimens).

Subgenus *CRICETULUS* Milne-Edwards, 1867

Cricetulus migratorius group. (Bullae large)

Cricetulus migratorius Pallas, 1773 Migratory Hamster; Grey Hamster

Approximate distribution of species: Greece, Southern Russia from Ukraine as far north as Zhitomir, Kiev, Chernigov, Kaluga, Ryazan, Gorki, Kazan and Ufa

Kuznetzov), Caucasus, Russian Turkestan where it is widely distributed, South-Western Siberia (south of Tyumen, Barabinsk Steppe, Novosibirsk district); Afghanistan, Persia, Asia Minor, Syria, Palestine; Baluchistan, Kashmir; Chinese Turkestan.

CRICETULUS MIGRATORIUS MIGRATORIUS Pallas, 1773

1773. *Mus migratorius* Pallas, Reise, *2:* 703. Lower River Ural, Western Siberia.
1779. *Mus accedula* Pallas, Nov. Spec. Quad. Glir. Ord. 257.
Range: Volgo-Ural Steppe (Kuznetzov).

CRICETULUS MIGRATORIUS ARENARIUS Pallas, 1773

1773. *Mus arenarius* Pallas, Reise, *2:* 704. Gratchefskoi on Irtish River, below Semipalatinsk, Siberia (according to a note left by Chaworth-Musters). Range: steppes of South-Western Siberia.

CRICETULUS MIGRATORIUS PHAEUS Pallas, 1779

1779. *Mus phaeus* Pallas, Nov. Spec. Quad. Glir. Ord. 261. Near Stalingrad, Russia.
1876. *Cricetus murinus* Severtzov, Ann. Mag. N.H. *18:* 54. Summit of Ori and Sarepta, Lower Volga.
1928. *Cricetulus migratorius phaeus sviridenkoi* Pidoplitschka, Trav. Mus. Zool. Kiev. *5:* 424. Areshevka, Kizlyar district, Terek region (just north of Caucasus).
Range: Lower Volga, Kalmuik Steppes, Eastern Ciscaucasia.

CRICETULUS MIGRATORIUS CINERASCENS Wagner, 1848

1848. *Hypudaeus cinerascens* Wagner, Arch für Nat. *1:* 184. Syria.
1865. *Cricetus isabellinus* de Filippi, Viaggio in Persia, 344. Persia.
Range: Baluchistan, North-West Frontier, Palestine, Syria, Persia, Afghanistan, Asia Minor (part). I do not believe there is more than one valid race in the region just listed (except possibly *vernula*, which is hard to define). Range probably also includes Kopet-Dag Mountains.

CRICETULUS MIGRATORIUS FULVUS Blanford, 1875

1875. *Cricetus (Cricetulus) fulvus* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 108. Plains of Eastern Turkestan, Pamir, and Wakhan. Range: Chinese Turkestan, and Kashmir. Quoted by Kuznetzov also from Eastern Tianshan. I have seen no Russian specimens. A valid race.

CRICETULUS MIGRATORIUS COERULESCENS Severtzov, 1879

1879. *Arvicola coerulescens* Severtzov, Est. Antrop. i. Etnogr. i, lief i, 63. Lake Karakul in Pamirs (Kuznetzov). (*N.V.*)
(?) 1917. *Cricetulus migratorius griseiventris* Thomas, Ann. Mag. N.H. *19:* 454. Probably not of Satunin, 1902.
1923. *Cricetulus fulvus pamirensis* Ognev, Bull. Soc. Nat. Moscow, *31:* 89. Russian Pamir.
1933. *Cricetulus migratorius coerulescens ognevi* Argyropulo, Z. Säuget. *8:* 148. Near Samarkand. Valid race according to Kuznetzov, 1944.
Range: Pamir Mountains. The form which Thomas called *griseiventris* and which seems valid occurs in Djarkent, Hissar Mountains, and Chinese Turkestan. It is not *fulvus*. Argyropulo says that *griseiventris* Satunin is a race of *longicaudatus*.

CRICETULUS MIGRATORIUS ATTICUS Nehring, 1902

1902. *Cricetulus atticus* Nehring, S.B. Ges. Nat. Fr. Berlin, 3. Pentelikon, Attica, Greece.

CRICETULUS MIGRATORIUS BELLICOSUS Scharleman, 1915

1915. *Cricetulus arenarius bellicosus* Scharleman, Charikov (? Kharkov) Bull. Vredit. Selisk. Choz. *3*, 1: 6. (*N.V.*) Near Stepantza, Kiev Province, Russia. Range: Ukraine, west of Dnieper, and in Kursk, Orel, Tula, Ryazan, Voronej and Tambov Provinces, Russia.

CRICETULUS MIGRATORIUS NEGLECTUS Ognev, 1916

1916. *Cricetulus phaeus neglectus* Ognev, Bull. Soc. Nat. Amis. Nat. Crimée, *5:* 81. Melitopol Steppes (River Burulcha and near village Atamanaia), Southern Russia.

1918. *Cricetulus falzfeini* Matschie, S.B. Ges. Nat. Fr. Berlin, 1. Ascania Nova, Taurien, Southern Russia.

Range: Southern Ukraine, Crimea.

CRICETULUS MIGRATORIUS VERNULA Thomas, 1917

1917. *Cricetulus migratorius vernula* Thomas, Ann. Mag. N.H. *19:* 453. Khotz, near Trebizond, Northern Asia Minor. Range: Northern Asia Minor.

CRICETULUS MIGRATORIUS CAESIUS Kashkarov, 1923

1923. *Cricetulus migratorius* (*phaeus*) *caesius* Kashkarov, Trans. Turkestan Sci. Soc. *1:* 215. Kara-Tau Mountains, valley of River Ters, Turkestan.

1923. *Cricetulus migratorius* (*phaeus*) *griseus* Kashkarov, *loc. cit.* Not of Milne-Edwards, 1867. Anlie-Ata, Russian Turkestan.

1926. *Cricetulus migratorius cinereus* Kashkarov, *nom. nov.* pro *griseus* Kashkarov, Key to Rodents Turkestan, Tashkent, 23.

Kuznetzov calls this form "*cinereus* (= *caesius*)" and says the type came from near Frunze. Range: mountains of Kirghizia.

CRICETULUS MIGRATORIUS PULCHER Ognev, 1924

1924. *Cricetulus migratorius pulcher* Ognev, Rodentia N. Caucasus, Roston-on-Don, 22. Near Lars, Military Georgian Road, 27 km. from Vladikawkaz (= Ordzhonikidze), Caucasus. Range: to Transcaucasia.

CRICETULUS MIGRATORIUS ZVIERESOMBI Pidoplitschka, 1928

1928. *Cricetulus migratorius zvieresombi* Pidoplitschka, Trav. Mus. Kiev, *5:* 421. Near Rostov-on-Don, Southern Russia. Range: Donetz, Don, and Azov Steppes.

Cricetulus barabensis Pallas, 1773 Striped Hamster

Approximate distribution of species: Barabinsk, Kulunda, and Pre-Altai Steppes, eastwards to Transbaikalia and Ussuri region in Siberia, Manchuria, Mongolia, Chihli, Shensi and Shansi, Shantung in Northern China.

CRICETULUS BARABENSIS BARABENSIS Pallas, 1773

1773. *Mus barabensis* Pallas, Reise, *2:* 704. Kasmalinskoi-Bor, Pawlowsk, near Barnaul, Siberia.

1779. *Mus furunculus* Pallas, Nov. Spec. Quad. Glir. Ord. 273.

Range: Southern Siberia, forest steppe part of Transbaikalia.

CRICETULUS BARABENSIS GRISEUS Milne-Edwards, 1867

1867. *Cricetulus griseus* Milne-Edwards, Ann. Sci. Nat. *7:* 376. Suenhoafu, near Kalgan, Mongolia.

(?) 1930. *Cricetulus manchuricus* Mori, Annot. Zool. Jap. *12:* 419. Harbin, Manchuria.

Range: Southern Transbaikalia, Mongolia, Northern China to Shantung and Chihli.

CRICETULUS BARABENSIS OBSCURUS Milne-Edwards, 1867

1867. *Cricetus (Cricetulus) obscurus* Milne-Edwards, Rech. Mamm. 136. Saratsi, Northern Shansi, China.

1888. *Cricetus mongolicus* Thomas, P.Z.S. 134 (footnote). Renaming of *obscurus*.

Range: Mongolia, Northern Shansi.

CRICETULUS BARABENSIS FUMATUS Thomas, 1909

1909. *Cricetulus griseus fumatus* Thomas, Ann. Mag. N.H. *4:* 503. Chu Chia Tai, near Chang Chun, Kirin Province, Manchuria. Range: Manchuria, Amur, forest part of Transbaikalia.

CRICETULUS BARABENSIS FERRUGINEUS Argyropulo, 1941

1941. *Cricetulus barabensis ferrugineus* Argyropulo, Faune U.S.S.R., new series, Moscow, 29, 170. Southern Ussuri region, South-Eastern Siberia.

Cricetulus longicaudatus Milne-Edwards, 1867 Lesser Long-tailed Hamster

Approximate distribution of species: Mid-Siberia (Western Sayan Mountains, South-Western Transbaikalia), China, from Kansu, Chihli, Shensi and Shansi, to Mongolia; and Manchuria.

CRICETULUS LONGICAUDATUS LONGICAUDATUS Milne-Edwards, 1867

1867. *Cricetus (Cricetulus) longicaudatus* Milne-Edwards, Rech. Mamm. 136. Probably near Saratsi in Northern Shansi, China.

1908. *Cricetulus andersoni* Thomas, P.Z.S. 642. One hundred miles north-west of Taiyuenfu, Shansi, China.

Range: Kansu, Shensi, Shansi, to Mongolia, and Manchuria.

CRICETULUS LONGICAUDATUS GRISEIVENTRIS Satunin, 1903

1903. *Cricetulus phaeus griseiventris* Satunin, Ann. Mus. St. Pétersb. *7:* 566. River Bisshengol, south side of Altain-nuru, Gobi Altai, Mongolia. (Status *fide* Argyropulo.)

CRICETULUS LONGICAUDATUS DICHROOTIS Satunin, 1903

1903. *Cricetulus dichrootis* Satunin, Ann. Mus. St. Pétersb. *7:* 567. River Gorban-angyr-gol, Nanshan, Chinese Central Asia. (G. Allen makes this a synonym of *barabensis obscurus*, Argyropulo says it is a race of *longicaudatus*.)

CRICETULUS LONGICAUDATUS NIGRESCENS G. Allen, 1925

1925. *Cricetulus andersoni nigrescens* G. Allen, Amer. Mus. Nov. 179, 2. One hundred miles north-east of Pekin, Chihli, China.

CRICETULUS LONGICAUDATUS KOZHANTSCIKOVI Vinogradov, 1927

1927. *Cricetulus kozhantscikovi* Vinogradov, Small Mamm. from Minussinsk district and Urjankhai, 33–50, 36. Tukeek-kem River, Ussinsk Frontier district, Sayan Mountains, Siberia.

Cricetulus lama group. (Bullae small)

Cricetulus lama Bonhote, 1905 — Tibetan Hamster

Approximate distribution of species: Tibet.

CRICETULUS LAMA Bonhote, 1905

1905. *Cricetulus lama* Bonhote, Abstr. P.Z.S. 14; P.Z.S. 305. Lhasa, Tibet.

Cricetulus alticola Thomas, 1917 — Short-tailed Tibetan Hamster

Approximate distribution of species: Tibet, Kashmir. (Differs from *C. lama* in its short unicolour tail.)

CRICETULUS ALTICOLA Thomas, 1917

1917. *Cricetulus alticola* Thomas, Ann. Mag. N.H. *19:* 455. Shushul, 13,500 ft., Ladak.

1922. *Cricetulus alticola tibetanus* Thomas & Hinton, Ann. Mag. N.H. *9:* 180. Tingri, 14,000 ft., Tibet.

Range: known from a few localities in Ladak, Upper Sutlej River, and Tibet.

Other named species, *incertae sedis:*

CRICETULUS KAMENSIS

Urocricetus kamensis Satunin, 1903. Ann. Mus. St. Pétersb. *7:* 574. River Moktschjun, district of Mekong, North-Eastern Tibet. Apparently known by one specimen only. Allied to or represents *C. longicaudatus* ?.

CRICETULUS KOZLOVI

Cricetulus kozlovi Satunin, 1903. Ann. Mus. Zool. St. Pétersb. *7:* 570. Oasis Satschou, Nanshan, Chinese Central Asia. G. Allen thinks it is a synonym of *C. barabensis obscurus*, but some of its cranial characters seem aberrant. Very little known.

Cricetus fuscatus Brandt, 1835. Mém. Acad. St. Pétersb. *3*, 6: 435. No locality. Probably unidentifiable.

Subgenus *ALLOCRICETULUS* Argyropulo, 1933

Cricetulus eversmanni Brandt, 1859 Eversmann's Hamster

Approximate distribution of species: Transvolgan Steppes, Southern Ural, Volgo-Ural Steppes, Northern Russian Turkestan (Kazakstan), east to Saissan and Mongolia.

CRICETULUS EVERSMANNI EVERSMANNI Brandt, 1859

1859. *Cricetus eversmanni* Brandt, Mel. Biol. Acad. St. Pétersb. 210. Northern Kazakstan Steppes (Kuznetzov).

CRICETULUS EVERSMANNI MICRODON, Ognev, 1925

1925. *Mesocricetus microdon* Ognev, Bull. Soc. Nat. Moscou, *33:* 14. District of Buguruslan, Govt. Samara, South-Eastern Russia.

CRICETULUS EVERSMANNI CURTATUS G. Allen, 1925

1925. *Cricetulus migratorius curtatus* G. Allen, Amer. Mus. Nov. 179, 3. Iren Dabasu, Inner Mongolia.

CRICETULUS EVERSMANNI BELJAWI Argyropulo, 1933

1933. *Cricetulus (Allocricetulus) beljawi* Argyropulo, Z. Säuget. *8:* 137. Near Saissan, Russian Asia.

1934. *Cricetulus eversmanni belajevi* Selewin, Bull. Univ. Asie. Centrale, *19:* 77, 78. Tokrau River, Karkaralinsk district.

1944. *Cricetulus eversmanni beljaevi* Kuznetzov in Bobrinskii, Mamm. U.S.S.R. 322. ? Emendation. Range: Saissan basin.

Subgenus *TSCHIERSKIA* Ognev, 1914

Cricetulus triton de Winton, 1899 Greater Long-tailed Hamster
Ratlike Hamster

Approximate distribution of species: Southern Ussuri region of Eastern Siberia, Korea, Manchuria, Chihli, Shantung, Shansi, Shensi, and Kansu, China.

CRICETULUS TRITON TRITON de Winton, 1899

1899. *Cricetus (Cricetulus) triton* de Winton, P.Z.S. 575. Northern Shantung, China.

CRICETULUS TRITON NESTOR Thomas, 1907

1907. *Cricetulus nestor* Thomas, P.Z.S. 466. Kim-hoa, 65 miles north-east of Seoul, Korea.

1914. *Tscherskia albipes* Ognev, Moskva Dnev. Zool. otd. obsc. liub. jest. *2:* 105. Southern Ussuri region (banks of River Tuman-Lau, Southern Primorsk district), South-Eastern Siberia.

1929. *Asiocricetus hampensis* Kishida, Lansania, Tokyo, *1:* 150. Bampo, 50 ft., Korea. Old specimen.)

1929. *Asiocricetus yamashinai* Kishida, *loc. cit.* 156. Bampo, Korea. (Sub-adult.) For status of the last two see Kuroda, List Jap. Mamm. 1938, 58.

Range: Korea, to Southern Ussuri region.

Cricetulus triton incanus Thomas, 1908

1908. *Cricetulus triton incanus* Thomas, Abstr. P.Z.S. 45; P.Z.S. 973. Twelve miles north-west of Kolanchow, Shansi, China.

Cricetulus triton fuscipes G. Allen, 1925

1925. *Cricetulus triton fuscipes* G. Allen, Amer. Mus. Nov. 179, 5. Pekin, Chihli, China.
1939. *Cricetulus arenosus* Mori, Report First Sci. Exped. Manchukuo, *5*, 2, 4: 64. Tungliao, north-east of Jehol, North-Eastern China.

Cricetulus triton collinus G. Allen, 1925

1925. *Cricetulus triton collinus* G. Allen, Amer. Mus. Nov. 179, 5. Base of Taipeishan, Tsingling Mountains, Shensi, China.
1935. *Cricetulus triton meihsienensis* Ho, Contr. Biol. Lab. Sci. Soc. China, *10:* 288. Meihsien, Shensi, China.

Range: Shansi, Shensi (part), Honan, China. There are far too many standing races in this species. It is probable that all are synonyms of the first name.

Cricetulus triton canus G. Allen, 1928

1928. *Cansumys canus* G. Allen, J. Mamm. *9:* 245. Choni, Southern Kansu, China.

Genus **PHODOPUS** Miller, 1910

1910. *Phodopus* Miller, Smiths. Misc. Coll. *52:* 498. *Cricetulus bedfordiae* Thomas.
1917. *Cricetiscus* Thomas, Ann. Mag. N.H. *19:* 456. *Cricetulus campbelli* Thomas.

2 species: *Phodopus roborovskii*, page 628
Phodopus sungorus, page 627

Phodopus sungorus Pallas, 1773 Striped Hairy-footed Hamster

Approximate distribution of species: Southern Siberia; the Barabinsk, Kulundinsk, Pre-Altai Steppe, Eastern Kazakstan (west to River Ischim and Lake Balkash), Transbaikalia, Mongolia and Manchuria.

Phodopus sungorus sungorus Pallas, 1773

1773. *Mus sungorus* Pallas, Reise, *2:* 703. Gratschefskoi (Gratschewsk), 100 km. west of Semipalatinsk, Siberia.
1779. *Mus songarus* Pallas, Nov. Spec. Quad. Glir. Ord. 269.
1941. *Phodopus songorus* Ellerman, Fam. Gen. Liv. Rodents, *2:* 437. (*Lapsus calami.*)

Range: steppes of North-Eastern Kazakstan and Southern Siberia.

Phodopus sungorus campbelli Thomas, 1905

1905. *Cricetulus campbelli* Thomas, Ann. Mag. N.H. *15:* 322. Shaborte, 42°40′ N,. Mongolia.
1912. *Phodopus crepidatus* Hollister, Smiths. Misc. Coll. *60*, 14: 3. Chuiskaya Steppe, 8 miles south of Kosh-Agatsch, 7,300 ft., Siberian Altai.

Range: Mongolia, Transbaikalia, Chuiskaya Steppe in Altai, Manchuria.

Phodopus roborovskii Satunin, 1903 Desert Hamster

Approximate distribution of species: Northern Kansu, Northern Shensi, Shansi, Mongolia, Manchuria.

PHODOPUS ROBOROVSKII ROBOROVSKII Satunin, 1903

1903. *Cricetulus roborovskii* Satunin, Ann. Mus. St. Pétersb. *7:* 571. Upper part of River Scharogol-dschin, Nanshan, Chinese Central Asia (North Kansu or its vicinity).

PHODOPUS ROBOROVSKII BEDFORDIAE Thomas, 1908

1908. *Cricetulus bedfordiae* Thomas, Abstr. P.Z.S., 45; P.Z.S., 974. Yulinfu, North Shensi, China. Ranges into Shansi and Mongolia.

PHODOPUS ROBOROVSKII PRAEDILECTUS Mori, 1930

1930. *Phodopus praedilectus* Mori, Annot. Zool. Jap. *12:* 418. Cheng-chia-tun, Central Manchuria.

Genus **CRICETUS** Leske, 1779

1779. *Cricetus* Leske, Anfangsgr. Naturg. *1:* 168. *Mus cricetus* Linnaeus. (*N.V.* Reference correct according to Neave and Palmer.)

1799. *Hamster* Lacepède, Tabl. Div. Ordres & Genres Mamm. 10. *Hamster nigricans* Lacepède = *Mus cricetus* Linnaeus.

1873. *Heliomys* Gray, Ann. Mag. N.H. *12:* 417. *Heliomys jeudii* Gray = *Mus cricetus* Linnaeus.

1 species: *Cricetus cricetus*, page 628

Cricetus cricetus Linnaeus, 1758 Common Hamster

Approximate distribution of species: Germany, Belgium, Holland, Northern France, Hungary, Rumania, Yugoslavia; Russia from Crimea and Caucasus northwards to Yaroslavi, Gorki and Kirov districts, Kazakstan and Semirechyia, eastwards in Siberia to districts of Minussinsk, Krasnoiarsk, Yenesei. Poland. ("Asia Minor" according to Kuznetzov and Miller, but I have never been able to verify its occurrence there which I am inclined to doubt.)

Kuznetzov states that there are no valid races in the U.S.S.R. Miller (1912) retained two races in Europe apart from the typical (one of which is represented in London , based on forms (? individuals) with small skulls. I list these provisionally until more material comes to hand.

CRICETUS CRICETUS CRICETUS Linnaeus, 1758

1758. *Mus cricetus* Linnaeus, Syst. Nat. 10th ed. *1:* 60. Germany.

1792. *Mus cricetus germanicus* Kerr, Anim. Kingd. 243. Germany.

1799. *Hamster nigricans* Lacepède, Tabl. Div. Ordres & Genres Mamm. 10. Germany.

1801. *Mus cricetus fulvus* Bechstein, Gemeinn Nat. Deutschlands, 2nd ed. *1:* 1010. Thuringia, Germany.

1811. *Cricetus frumentarius* Pallas, Zoogr. Rosso-Asiat. 161. Renaming of *Mus cricetus*.
1867. *Cricetus vulgaris varius* Fitzinger, S.B. Akad. Wiss. Wien. *56*, 1: 98. Europe.
1867. *Cricetus vulgaris albus* Fitzinger, *loc. cit.* Germany.
1867. *Cricetus vulgaris niger* Fitzinger, *loc. cit.* Austria, Hungary, Germany.
1873. *Heliomys jeudii* Gray, Ann. Mag. N.H. *12:* 417. No exact locality.
1899. *Cricetus vulgaris rufescens* Nehring, S.B. Ges. Nat. Fr. Berlin, 2. Tjubuk, Ural region.
1903. *Cricetus vulgaris babylonicus* Nehring, S.B. Ges. Nat. Fr. Berlin, 360. "S.E. Baghdad", where the animal does not occur. See Wepner, 1934, Z. Säuget. *9:* 437; type locality, Northern Caucasus.
1906. *Cricetus vulgaris niger* Simroth, Biol. Centralblatt, *26:* 337. Valley of Saale, Germany.
1907. *Cricetus vulgaris stavropolicus* Satunin, Tiflis Mitt. Kauk. Mus. *3:* 26. Village Predteca, Steppe on Kalaus River, Govt. Stavropol, Russia.
1912. "1803. *Cricetus vulgaris* Geoffroy, Catal. Mammif. de Mus. Nat. d'Hist. Nat., p. 196, northern and eastern Europe (Renaming of *Mus cricetus*)", Miller, Cat. Mamm. Western Europe, 602 (in synonymy). Not valid, as according to Sherborn this was never published.
1916. *Cricetus polychroma* Krulikovski, Bull. Soc. Oural. Nat. *35:* 5. No locality.
1923. *Cricetus cricetus latycranius* Ognev, Biol. Mitt. Timiriazeff, *1:* 110. Nikolaevsk, Govt. of Samara, Russia.
1924. *Cricetus cricetus tauricus* Ognev, Rodentia N. Caucasus, Rostov-on-Don, 19. Near Simferopol, Crimea, Southern Russia.
1924. *Cricetus cricetus tomensis* Ognev, Rodentia N. Caucasus, 19. Kruglikhina, Tomsk Govt., Siberia.
1932. *Cricetus cricetus fuscidorsis* Argyropulo, Trav. Inst. Zool. Acad. Sci. Leningrad, *1:* 235. Semirechyia, Russian Asia.

CRICETUS CRICETUS CANESCENS Nehring, 1899

1899. *Cricetus vulgaris* var. *canescens* Nehring, S.B. Ges. Nat. Fr. Berlin, 1. Near Fexhe-Slins, banks of Maas, Belgium. Range: Belgium, North-Western Germany, probably Northern France.

CRICETUS CRICETUS NEHRINGI Matschie, 1901

1901. *Cricetus nehringi* Matschie, S.B. Ges. Nat. Fr. Berlin, 232. Slobosia, Rumania.

Genus **MESOCRICETUS** Nehring, 1898

1898. *Mesocricetus* Nehring, Zool. Anz. *21:* 494. *Cricetus nigricans* Brandt = *Mesocricetus nigriculus* Nehring.
1898. *Semicricetus* Nehring, Zool. Anz. *21*, 494 (footnote). Alternative for *Mesocricetus*.
1898. *Mediocricetus* Nehring, Zool. Anz. *21*, 494 (footnote). Alternative for *Mesocricetus*.

1 species: *Mesocricetus auratus*, page 630

I do not think there is more than one valid species in this genus. Kuznetzov retains two, *auratus* (with *brandti*) and *raddei* (with the other Russian races).

Mesocricetus auratus Waterhouse, 1839 Golden Hamster

Approximate distribution of species: Rumania, Bulgaria; Caucasus and Transcaucasia; Eastern Asia Minor, Syria, Palestine, North-Western Persia.

Mesocricetus auratus auratus Waterhouse, 1839

1839. *Cricetus auratus* Waterhouse, P.Z.S. 57. Aleppo, Syria.

Mesocricetus auratus raddei Nehring, 1894

1894. *Cricetus nigricans raddei* Nehring, Zool. Anz. *18:* 148. River Samur, Daghestan, Caucasus.

Mesocricetus auratus newtoni Nehring, 1898

1898. *Cricetus newtoni* Nehring, Zool. Anz. *21:* 329. Schumla, Eastern Bulgaria. Range: eastern parts of Rumania and Bulgaria.

Mesocricetus auratus brandti Nehring, 1898

1898. *Cricetus brandti* Nehring, Zool. Anz. *21:* 331. Central Georgia (Govt. Tiflis), Transcaucasia.

1900. *Mesocricetus koenigi* Nehring, Zool. Anz. *23:* 301. Kasikoporan, Govt. Eriwan, Armenia, Transcaucasia.

Range: Transcaucasia, Eastern Asia Minor, Kazvin in Persia, south to Palestine; also Buinsk district of Southern Daghestan.

Mesocricetus auratus nigriculus Nehring, 1898

1898. *Mesocricetus nigriculus* Nehring, Zool. Anz. *21:* 495. River Malka, mountains of middle part of Northern Caucasus.

1832. *Cricetus nigricans* Brandt, Ménétries Cat. Rais. 22. Not of Lacepède, 1799.

Range: north slopes Caucasus range and steppes of Ciscaucasia.

Mesocricetus auratus avaricus Ognev & Heptner, 1927

1927. *Mesocricetus raddei avaricus* Ognev & Heptner, Ann. Mag. N.H. *19:* 142. Near Village Aoul, Khunsakh, Avarsky district, Daghestan, 5,530 ft., Caucasus. Range: Khunsakh plateau, in Daghestan.

Subfamily Gerbillinae

Genera: *Brachiones*, page 648
Gerbillus, page 631
Meriones, page 637
Pachyuromys, page 637
Psammomys, page 647
Rhombomys, page 648
Tatera, page 636

For key to genera see Ellerman, 1941, *Fam. Gen. Liv. Rodents, 2:* 499–500.

Genus **GERBILLUS** Desmarest, 1804

1804. *Gerbillus* Desmarest, Nouv. Dict. H.N. *24*, Tab. Méth.: 22. *Gerbillus aegyptius* Desmarest = *Dipus gerbillus* Olivier.
1881. *Dipodillus* Lataste, Le Naturaliste, Paris, *1:* 506. *Gerbillus simoni* Lataste. Valid as a subgenus.
1882. *Endecapleura* Lataste, Le Naturaliste, Paris, *2:* 127. *Gerbillus garamantis* Lataste.
1884. *Hendecapleura* Lataste, Ann. Mus. Civ. Stor. Nat. Genova, *20:* 258 (footnote). (Emendation of *Endecapleura.*)
1910. *Microdillus* Thomas, Ann. Mag. N.H. *5:* 197. *Dipodillus peeli* de Winton from Somaliland. Valid as a subgenus.

10 species in the area covered by this list:

Gerbillus campestris, page 631
Gerbillus cheesmani, page 635
Gerbillus dasyurus, page 633
Gerbillus famulus, page 632
Gerbillus gerbillus, page 634
Gerbillus gleadowi, page 635
Gerbillus henleyi, page 633
Gerbillus nanus, page 632
Gerbillus poecilops, page 632
Gerbillus pyramidum, page 635

For a key to these species see Ellerman, 1947, *P.Z.S. 117:* 269.

Subgenus *DIPODILLUS* Lataste, 1881

Gerbillus campestris Levaillant, 1857 — Large North African Gerbil

Approximate distribution of species: Morocco, Algeria, Tunis, Libya, east just into Egypt(Siwa; specimens in B.M.). Southwards to Sudan, and Asben.

Gerbillus campestris campestris Levaillant, 1857

1857. *Gerbillus campestris* Levaillant, Atlas Expl. Sc. Alg. Mamm. pl. V, fig. 2. Phillipeville, Province of Constantine, Algeria. (Lataste, 1881.)
1858. *Gerbillus gerbii* Loche, Cat. Mamm. & Oiseaux Observées en Algérie, 23. Country of the Beni Sliman, Algeria. *Nom. nud.?*
1858. *Gerbillus minutus* Loche, *loc. cit.* 23. Douilba, Algerian Sahara. *Nom. nud.?*
1867. *Gerbillus desertii* Loche, Expl. Alg. 107. Ouargla, Algeria.

Range: Algeria to Libya, and Siwa in Egypt.

For date of publication of *campestris* Levaillant, *fide* Trouessart (1897).

Gerbillus campestris dodsoni Thomas, 1902

1902. *Dipodillus dodsoni* Thomas, P.Z.S. *2:* 7. Ain Hammam, Tripoli. Probably = *campestris.*

Gerbillus campestris rozsikae Thomas, 1908

1908. *Dipodillus campestris roszikae* (sic) Thomas, Ann. Mag. N.H. *2:* 374. Biskra, Algeria.
1913. *Dipodillus campestris rozsikae* Thomas, Nov. Zool. *20:* 589. Correction of typographical error. Probably = *campestris.*

GERBILLUS CAMPESTRIS CINNAMOMEUS Cabrera, 1916

1916. *Dipodillus campestris cinnamomeus* Cabrera, Bol. Real. Soc. Esp. H.N. *16:* 385. Taguidert, south of Mogador, Morocco.

GERBILLUS CAMPESTRIS RIPARIUS Cabrera, 1922

1922. *Dipodillus campestris riparius* Cabrera, Bol. Real. Soc. Esp. H.N. *22:* 112. Valley of Wadi Martin, Yebala, Morocco.

GERBILLUS CAMPESTRIS PATRIZII de Beaux, 1932

1932. *Dipodillus dodsoni patrizii* de Beaux, Ann. Mus. Civ. Stor. Nat. Genova, *55:* 379. Oasis di Cufra, Libyan Desert, Libya.

Gerbillus poecilops Yerbury & Thomas, 1895 Large Aden Gerbil

Approximate distribution of species: Southern Arabia.

GERBILLUS POECILOPS Yerbury & Thomas, 1895

1895. *Gerbillus* (*Dipodillus*) *poecilops* Yerbury & Thomas, P.Z.S. 549. Lahej, Aden, Southern Arabia. Range: known from a few localities near Aden.

Gerbillus famulus Yerbury & Thomas, 1895 Black-tufted Gerbil

Approximate distribution of species: Southern Arabia.

GERBILLUS FAMULUS Yerbury & Thomas, 1895

1895. *Gerbillus* ("*Hendecapleura*") *famulus* Yerbury & Thomas, P.Z.S. 551. Lahej, Aden, Southern Arabia.

Gerbillus nanus Blanford, 1875 Baluchistan Gerbil

Approximate distribution of species: Baluchistan, Northern, Eastern and Middle Arabia, Palestine, Southern Egypt, Sudan, Tunis, Algeria, south to Asben and Somaliland. (The extralimital forms *principulus*, *watersi* and *brockmani* appear to belong in this species.)

GERBILLUS NANUS NANUS Blanford, 1875

1875. *Gerbillus nanus* Blanford, Ann. Mag. N.H. *16:* 312. Gedrosia, west of Gwadar, Baluchistan. Range: Baluchistan, and Muscat in Eastern Arabia.

GERBILLUS NANUS GARAMANTIS Lataste, 1881

1881. *Gerbillus garamantis* Lataste, Le Naturaliste, Paris, *1:* 507. Sidi-Roueld, Ouargla, Algeria. Range: Tunis, Algeria, south to Asben.

GERBILLUS NANUS MACKILLIGINI Thomas, 1904

1904. *Dipodillus mackilligini* Thomas, Ann. Mag. N.H. *14:* 158. Wadi Alagi, Eastern Egyptian Desert (about 22° N., 35° E.). Southern Egypt.

GERBILLUS NANUS ARABIUM Thomas, 1918
1918. *Dipodillus arabium* Thomas, Ann. Mag. N.H. *2:* 61. Tebuk, North-Western Arabia.
(?) 1935. *Dipodillus quadrimaculatus* Bodenheimer, Anim. Life in Palestine, 98. Probably not *quadrimaculatus* Lataste, 1882, Le Naturaliste, Paris, *2:* 27, from Nubia.
Range: Palestine, and several localities in Arabia.

Gerbillus dasyurus Wagner, 1842 Wagner's Gerbil

Approximate distribution of species: Western India, from Punjab, Kathiawar, Sind, Gujerat, North-West Frontier; Iraq, Arabia, south to Aden, Palestine; Egypt, Libya, Algeria; also probably represented in Somaliland, Sudan and Kenya.

This is the first named species in the subgenus.

GERBILLUS DASYURUS DASYURUS Wagner, 1842
1842. *Meriones dasyurus* Wagner, Arch. Nat. *8,* 1: 20. Sinai.
1901. *Dipodillus dasyuroides* Nehring, S.B. Ges. Nat. Fr. Berlin, 173. Mountains of Moab, Palestine.
Range: various localities in Northern Arabia; Sinai, Palestine, Iraq.

GERBILLUS DASYURUS SIMONI Lataste, 1881
1881. *Gerbillus simoni* Lataste, Le Naturaliste, Paris, *1*: 499. Oued Magra, north of Hodna, Algeria.

GERBILLUS DASYURUS LIXA Yerbury & Thomas, 1895
1895. *Gerbillus (Dipodillus) lixa* Yerbury & Thomas, P.Z.S. 550. Shaik Othman, Aden district, Southern Arabia.
1902. *Dipodillus mimulus* Thomas, Ann. Mag. N.H. *9:* 362. Lahej, Aden, Southern Arabia.
The name *lixa* was based on a young specimen of which *mimulus* is in all probability the adult.

GERBILLUS DASYURUS AMOENUS de Winton, 1902
1902. *Dipodillus amoenus* de Winton, Ann. Mag. N.H. *9:* 46. Giza Province, Egypt.

GERBILLUS DASYURUS VIVAX Thomas, 1902
1902. *Dipodillus vivax* Thomas, P.Z.S. 8. Sebha, Libya.

GERBILLUS DASYURUS INDUS Thomas, 1920
1920. *Dipodillus indus* Thomas, J. Bombay N.H. Soc. *26,* 4: 935. Gambat, Khairpur, Sind, India. Range: Southern Waziristan, Punjab, Sind, Palanpur, Kathiawar in India.

Gerbillus henleyi de Winton, 1903 Pygmy Gerbil

Approximate distribution of species: Egypt, Sinai and Algeria.

GERBILLUS HENLEYI HENLEYI de Winton, 1903
1903. *Dipodillus henleyi* de Winton, Nov. Zool. *10:* 284. Zaghig, Wadi Natron, Egypt.

GERBILLUS HENLEYI MARIAE Bonhote, 1909

1910. *Dipodillus mariae* Bonhote, P.Z.S. 1909: 792. Mokattam Hills, east of Cairo, Egypt. Has also been recorded from Sinai.

GERBILLUS HENLEYI JORDANI Thomas, 1918

1918. *Dipodillus jordani* Thomas, Ann. Mag. N.H. *2:* 60. Guelt-es-Stel, 900 m., Central Plateau of Algeria.

Not identified:

Dipodillus hilda Thomas, 1918. Ann. Mag. N.H. *2:* 62. Sea coast, 70 miles south-west of Tangier, Morocco. It is impossible to say whether this represents *dasyurus* or *namus*, as the type skull (and only specimen available) lacks the bullae, the main distinguishing character.

Subgenus *GERBILLUS* Desmarest, 1804

Gerbillus gerbillus Olivier, 1800 Lesser Egyptian Gerbil

Approximate distribution of species: Algeria, Tunis, Libya, Egypt, Sinai, Palestine; Sudan, Northern Nigeria, Uganda, Asben. Perhaps also in South Africa, as there is little evidence that the South African forms of *Gerbillus* (*sensu stricto*) are in reality species distinct from this. (Shortridge, 1942, separated the very distinct South African species *G. vallinus* subgenerically as *Gerbillurus*.)

GERBILLUS GERBILLUS GERBILLUS Olivier, 1800

1800. *Dipus gerbillus* Olivier, Bull. Soc. Philom. Paris, *2:* 121. Giza Province, Egypt.
1804. *Gerbillus aegyptius* Desmarest, Nouv. Dict. H.N. *24*, Tab. Méth.: 22. Near Alexandria, Egypt.
(?) 1843. *Meriones longicaudus* Wagner, Schreb. Säugeth. Suppl. *3:* 477. Egypt.
(?) 1902. *Gerbillus eatoni* Thomas, P.Z.S. *2:* 6. El Cusher, Libya.

Range: Egypt, Libya, Algeria, to Palestine (*fide* Bodenheimer).

GERBILLUS GERBILLUS ANDERSONI de Winton, 1902

1902. *Gerbillus andersoni* de Winton, Ann. Mag. N.H. *9:* 45. Mandara, Egypt.
1919. *Gerbillus bonhotei* Thomas, Ann. Mag. N.H. *3:* 360. Khabra-abu-Guzoor, south-east of El Arish, Northern Sinai.

Range: Egypt (part), and Sinai.

GERBILLUS GERBILLUS LATASTEI Thomas & Trouessart, 1903

1903. *Gerbillus latastei* Thomas & Trouessart, Bull. Soc. Zool. France, *28:* 172. Kebili, Southern Tunis. (A little known and rather dubious form.)

GERBILLUS GERBILLUS ALLENBYI Thomas, 1918

1918. *Gerbillus allenbyi* Thomas, Ann. Mag. N.H. *2:* 146. Rehoboth, near Jaffa, Palestine.

GERBILLUS GERBILLUS FOLEYI Heim de Balsac, 1936

1936. *Gerbillus foleyi* Heim de Balsac, Suppl. Biol. Bull. de France et de Belgique, Paris, *21:* 317, 389; and *1937*, Bull. Soc. Zool. France, *62:* 331. Beni-abbes, Western Algeria.

Gerbillus gleadowi Murray, 1886 Indian Hairy-footed Gerbil

Approximate distribution of species: Punjab, Gujerat and Sind, North-Western India.

Gerbillus gleadowi Murray, 1886

1886. *Gerbillus gleadowi* Murray, Ann. Mag. N.H. *17:* 246. Beruto, 15 miles south-west of Rehti, in Mirpur-Drahrki Taluka of the Rohri district, Upper Sind, India.

Gerbillus pyramidum I. Geoffroy, 1825 Greater Egyptian Gerbil

Approximate distribution of species: Morocco, Algeria, Libya, Egypt, to Sinai and Palestine, southwards to Asben and Sudan.

Gerbillus pyramidum pyramidum I. Geoffroy, 1825

1825. *Gerbillus pyramidum* I. Geoffroy, Dict. Class. H.N. *7*: 321. Giza Province, Egypt.
(?) 1838. *Gerbillus pygargus* Cuvier, Trans. Zool. Soc. London, *2:* 142. Upper Egypt.
1838. *Gerbillus burtoni* Cuvier, Trans. Zool. Soc. London, *2:* 145. "Dahrfur."
Range: Egypt, and Algeria (El Golea, In Salah).

Gerbillus pyramidum hirtipes Lataste, 1882

1881. *Gerbillus hirtipes* Lataste, Le Naturaliste, Paris, *1*: 506; 1882, *2*: 21. Bamendile, Ouargla, Algeria. Range: Algeria, in part.

Gerbillus pyramidum tarabuli Thomas, 1902

1902. *Gerbillus pyramidum tarabuli* Thomas, P.Z.S. *2:* 5. Sebha, Libya.
(?) 1919. *Gerbillus floweri* Thomas, Ann. Mag. N.H. *3:* 559. South of El Arish, about 31° N., 34° E., in Northern Sinai.
Range: Libya, Egypt in part, Sinai, Palestine.

Gerbillus pyramidum riggenbachi Thomas, 1903

1903. *Gerbillus riggenbachi* Thomas, Nov. Zool. *10:* 301. Rio de Oro, North-West Africa.

Gerbillus pyramidum hesperinus Cabrera, 1906

1906. *Gerbillus hirtipes hesperinus* Cabrera, Bol. Real. Soc. Esp. H.N. *6*: 365. Mogador, Morocco.

Gerbillus cheesmani Thomas, 1919 Cheesman's Gerbil

Approximate distribution of species: Iraq, Arabia.

Gerbillus cheesmani cheesmani Thomas, 1919

1919. *Gerbillus cheesmani* Thomas, J. Bombay N.H. Soc. *26:* 748. Near Basra, Lower Euphrates, Iraq. Range: Iraq, and Arabia in part.

GERBILLUS CHLESMANI ARDUUS Cheesman & Hinton, 1924

1924. *Gerbillus arduus* Cheesman & Hinton, Ann. Mag. N.H. *14:* 551. Jabal Dharabin, Jafura, Central Arabia. Range: Arabia (part), to the south of the range of the last race.

Incertae sedis

Gerbillus (*Dipodillus*) *grobbeni* Klaptocz, 1909, Zool. Jb. Syst. *27:* 252. Dernah, north coast of Barka, Cyrenaica. From description, most likely to represent *Gerbillus nanus*.

Genus **TATERA** Lataste, 1882

1882. *Tatera* Lataste, Le Naturaliste, Paris, *2:* 126. *Dipus indicus* Hardwicke.
1897. *Gerbilliscus* Thomas, P.Z.S. 433. *Gerbillus böhmi* Noack, from Tropical Africa. Valid as a subgenus.
1917. *Taterona* Wroughton, J. Bombay N.H. Soc. *25*, 1: 40. *Gerbillus afra* Gray, from South Africa.

1 species in Asia:

Tatera indica, page 636

Tatera indica Hardwicke, 1807 — Indian Gerbil; Antelope Rat

Approximate distribution of species: Ceylon, Peninsula of India northwards to Kathiawar, Sind, Kumaon, Baluchistan, Punjab, Nepal Terai; Persia, Iraq, Syria, Northern Arabia.

TATERA INDICA INDICA Hardwicke, 1807

1807. *Dipus indicus* Hardwicke, Trans. Linn. Soc. London, *8:* 279. Between Benares and Hardwar, United Provinces, Northern India.
1838. *Gerbillus otarius* Cuvier, Trans. Zool. Soc. London, *2:* 144, pl. 26, figs. 14–18. Peninsular India.
1906. *Tatera persica* Wroughton, Ann. Mag. N.H. *17:* 477, 496. Seistan, Persia.
1906. *Tatera hailwardi monticola* Wroughton, Ann. Mag. N.H. *17:* 477, 498. Malamir, Persia.
1917. *Tatera sherrini* Wroughton, J. Bombay N.H. Soc. *25*, 1: 43. Jacobabad, Sind, India.
1917. *Tatera dunni* Wroughton, J. Bombay N.H. Soc. *25*, 1: 43. Ambala, Punjab.

Range: Nepal Terai, Punjab, Kumaon, Baluchistan, Sind, Gujerat, Kathiawar, Cutch, Bihar, Central Provinces to Northern Bombay, India, and Persia (in part).

TATERA INDICA CUVIERI Waterhouse, 1838

1838. *Gerbillus cuvieri* Waterhouse, P.Z.S. 56. Arcot, Madras, India. Range: Nilgiri Hills, Mysore, Madras, Bellary, Shevaroy Hills, and a few other places in Southern India.

Tatera indica taeniura Wagner, 1843

1843. *Meriones taeniurus* Wagner, Schreb. Säuget. Suppl. *3:* 471. Syria.
1906. *Tatera persica scansa* Wroughton, Ann. Mag. N.H. *17:* 477, 496. Kerman, 5,700 ft., Persia.
1906. *Tatera bailwardi* Wroughton, Ann. Mag. N.H. *17:* 477, 498. Karun River (Bunda Kil), Persia.
1921. *Tatera pitmani* Cheesman, J. Bombay N.H. Soc. *27:* 337. Baiji, Tigris, Iraq.

Range: Persia (in part), Iraq, Northern Arabia (Kuwait), Syria.

Tatera indica hardwickei Gray, 1843

1843. *Gerbillus hardwickei* Gray, List. Mamm. 132. Dharwar, India. Based on Elliot's description of the Dharwar *Tatera*, 1839, Madras J. Litt. Sci. *10:* 211. Range: Coorg, Western Bombay, Kardibetta Forest in Mysore.

Tatera indica ceylonica Wroughton, 1906

1906. *Tatera ceylonica* Wroughton, Ann. Mag. N.H. *17:* 477, 499. Ceylon.

Genus **PACHYUROMYS** Lataste, 1880

1880. *Pachyuromys* Lataste, Le Naturaliste, Paris, *1:* 313. *Pachyuromys duprasi* Lataste.

1 species: *Pachyuromys duprasi*, page 637

Pachyuromys duprasi Lataste, 1880 — Fat-tailed Gerbil

Approximate distribution of species: North Africa; Algeria, Tunis, Egypt.

Pachyuromys duprasi duprasi Lataste, 1880

1880. *Pachyuromys duprasi* Lataste, Le Naturaliste, Paris, *1:* 314. Laghouat, Algerian Sahara.

Pachyuromys duprasi natronensis de Winton, 1903

1903. *Pachyuromys dupresi* (sic) *natronensis* de Winton, Nov. Zool. *10:* 285. Bir Victoria, on way to Wadi Natron from the Nile, Egypt.

Pachyuromys duprasi faroulti Thomas, 1920

1920. *Pachyuromys duprasi faroulti* Thomas, Nov. Zool. *27:* 313. Méchéria, 100 km. north-west of Ain Sefra, plateau of Western Algeria.

Genus **MERIONES** Illiger, 1811

1811. *Meriones* Illiger, Prodr. Syst. Mamm. 82. *Mus tamariscinus* Pallas.
1900. *Idomeneus* Schulze, Z. Naturw. Stuttgart, *73:* 201. *Mus tamariscinus* Pallas.
1919. *Cheliones* Thomas, Ann. Mag. N.H. *3:* 265. *Gerbillus hurrianae* Jerdon. Valid as a subgenus.
1933. *Pallasiomys* Heptner, Z. Säuget. *8:* 150. *Gerbillus erythrourus* Gray. Valid as a subgenus.

MERIONES [*contd.*]

1937. *Parameriones* Heptner, Bull. Soc. Nat. Moscou, Biol. *46:* 190. *Gerbillus persicus* Blanford. Valid as a subgenus.

1947. *Sekeetamys* Ellerman, P.Z.S. *117:* 271. *Gerbillus calurus* Thomas. Valid as a subgenus.

13 species:

Meriones arimalius, page 644
Meriones blackleri, page 640
Meriones calurus, page 638
Meriones crassus, page 646
Meriones hurrianae, page 639
Meriones libycus, page 644
Meriones meridianus, page 642
Meriones persicus, page 639
Meriones rex, page 639
Meriones shawi, page 643
Meriones tamariscinus, page 640
Meriones unguiculatus, page 641
Meriones vinogradovi, page 640

For revision see Chaworth-Musters & Ellerman, 1947, A Revision of the genus *Meriones*, *P.Z.S. 117:* 478–504. Keys are included for all species except *vinogradovi* which is not represented in London and is placed next to *tristrami* (= *blackleri* as understood by Kuznetzov) in Kuznetzov's key, 1944. It differs from *blackleri* in having the soles of the hindfeet entirely hairy (lacking the bare patch of *blackleri*), and from *tamariscinus* in lacking the brown sole and bicolor tail; its bullae are said to be small.

Subgenus *SEKEETAMYS* Ellerman, 1947

Meriones calurus Thomas, 1892 — Bushy-tailed Jird

Approximate distribution of species: Sinai, Palestine (a specimen recently received in the B.M.) and Eastern Egypt.

MERIONES CALURUS Thomas, 1892

1892. *Gerbillus calurus* Thomas, Ann. Mag. N.H. *9:* 76. Near Tor, Sinai.

Subgenus *PARAMERIONES* Heptner, 1937

Meriones persicus Blanford, 1875 — Persian Jird

Approximate distribution of species: Transcaucasia and Kopet-Dag Mountains in South-Western Russian Turkestan, Persia, Afghanistan, Baluchistan, and into Asiatic Turkey according to Neuhauser.

MERIONES PERSICUS PERSICUS Blanford, 1875

1875. *Gerbillus persicus* Blanford, Ann. Mag. N.H. *16:* 312. Kohrud, 150 miles north of Isfahan, Persia.

1919. *Meriones ambrosius* Thomas, Ann. Mag. N.H. *3:* 270. Dopolan, 120 miles north-east of Ahwaz, Persia.

Range: Persia, into Baluchistan.

MERIONES PERSICUS BAPTISTAE Thomas, 1920

1920. *Meriones persicus baptistae* Thomas, J. Bombay N.H. Soc. *26:* 934. Pasht Kuh, 27°2′ N., 65°12′ E., Baluchistan.

MERIONES PERSICUS SUSCHKINI Kashkarov, 1925

1925. *Tatera suschkini* Kashkarov, Trans. Soc. Sci. Turkestan, *2:* 51 (56). Arshevi Les, Bashi-Mgur, Great Balchan Mountains, Turkmenistan.

MERIONES PERSICUS ROSSICUS Heptner, 1931

1931. *Meriones rossicus* Heptner, Zool. Anz. *94:* 120. Arzni, 20 km. north of Eriwan, Transcaucasia.

MERIONES PERSICUS GURGANENSIS Goodwin, 1939

1939. *Meriones* (*Parameriones*) *persicus gurganensis* Goodwin, Amer. Mus. Nov. 1050, 2. Dasht, Budjurd district, about 3,200 ft., North-Eastern Persia.
(The bullae of this form are from description too large for *M. persicus*, but there is more than one way of taking this measurement.)

Meriones rex Yerbury & Thomas, 1895 King Jird

Approximate distribution of species: Southern Arabia.

MERIONES REX REX Yerbury & Thomas, 1895

1895. *Meriones rex* Yerbury & Thomas, P.Z.S. 552. Lahej, near Aden, Southern Arabia.

MERIONES REX BURYI Thomas, 1902

1902. *Meriones buryi* Thomas, Ann. Mag. N.H. *10:* 488. Zabed, Haushabi, in hills north of Aden, 4,300 ft., Southern Arabia.

MERIONES REX PHILBYI Morrison-Scott, 1939

1939. *Tatera philbyi* Morrison-Scott, Nov. Zool. *41:* 196. Najran (Nedjran), 17°30′ N. 44°20′ E., Arabia.

Subgenus *CHELIONES* Thomas, 1919

Meriones hurrianae Jerdon, 1867 Indian Desert Gerbil

Approximate distribution of species: Punjab, Rajputana, south to Sind and Cutch, Gujerat, Kathiawar; Baluchistan, North-West Frontier, just over the borders into Afghanistan and Persia.

MERIONES HURRIANAE Jerdon, 1867

1867. *Gerbillus hurrianae* Jerdon, Mamm. India, 186. Hissar, Punjab, India.
1919. *Cheliones hurrianae collinus* Thomas, J. Bombay N.H. Soc. *26:* 726. Kohat, North-West Frontier Province, 1,000–1,700 ft., India.

Subgenus *MERIONES* Illiger, 1811

Meriones vinogradovi Heptner, 1931 (Subgeneric status provisional)

Approximate distribution of species, according to Kuznetzov: North-Western Persia, North-Eastern Asia Minor, and in U.S.S.R. near Dzhulfa on Araksu (Transcaucasia).

MERIONES VINOGRADOVI Heptner, 1931

1931. *Meriones vinogradovi* Heptner, Zool. Anz. *94:* 122. Persian Azerbaijan, no exact locality.

Meriones tamariscinus Pallas, 1773 Tamarisk Gerbil

Approximate distribution of species: Northern Caucasus to Lower Volga, Russian Turkestan where it is common, except in the south-west; Northern Kansu, and according to Kuznetzov, Zungaria. (Russian localities include as far north as Elista, Enotaevsk, Kalmuikov, Irgiz, Aral Kara-Kum and north coast Lake Balkash; south to Kara-Kum Desert, Samarkand and Bokhara oases and Fergana Valley; also Issik-Kul Basin and valleys of Kirghiz Mountains.)

MERIONES TAMARISCINUS TAMARISCINUS Pallas, 1773

1773. *Mus tamariscinus* Pallas, Reise. Russ. Reich. *2:* 702. Saraitschikowsk, about 30 km. north of Redutsk, mouth of Ural River, Kazakstan.

1779. *Mus tamaricinus* Pallas, Nov. Spec. Quad. Glir. Ord. 322.

Range: Volgo-Ural and Ural-Emba steppes.

MERIONES TAMARISCINUS SATSCHOUENSIS Satunin, 1903

1903. *Gerbillus tamaricinus satschouensis* Satunin, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *7:* 555. Satschou, Kansu, China.

MERIONES TAMARISCINUS CISCAUCASICUS Satunin, 1907

1907. *Gerbillus ciscaucasicus* Satunin, Mitt. Kaukas. Mus. *3:* 113, 155. Tscherwlennaja, Terek River, Northern Caucasus. Range: steppes of Daghestan and Kalmuikia.

MERIONES TAMARISCINUS JAXARTENSIS Ognev & Heptner, 1928

1928. *Gerbillus tamaricinus jaxartensis* Ognev & Heptner, Zool. Anz. *75:* 264. Kara Usiak Station on Orenberg-Tashkent Railway, at mouth of Syr Darya, Kazakstan.

MERIONES TAMARISCINUS KOKANDICUS Heptner, 1933

1933. *Meriones tamaricinus kokandicus* Heptner, Z. Säuget. *8:* 152. Mirsa Aral, 35 km. north of Kokand, Fergana Valley, Russian Central Asia.

Meriones blackleri Thomas, 1903 Turkish Jird

Approximate distribution of species: Transcaucasia, Asia Minor, Persia, Syria.

Meriones blackleri blackleri Thomas, 1903

1903. *Meriones blackleri* Thomas, Ann. Mag. N.H. *12:* 189. Smyrna, Western Asia Minor.

1919. *Meriones blackleri lycaon* Thomas, Ann. Mag. N.H. *3:* 272. Kara Dagh, about 80 km. south-east of Konia, Lycaonia, Asia Minor.

Range: Asia Minor, to Kazvin in Persia.

Meriones blackleri bogdanovi Heptner, 1931

1931. *Meriones bogdanovi* Heptner, Zool. Anz. *94:* 121. Pirchantapa, Schirinkum Steppe, Saljany district, Eastern Transcaucasia.

Meriones blackleri bodenheimeri Aharoni, 1932

1932. *Meriones tamaricinus bodenheimeri* Aharoni, Z. Säuget. *7:* 197. Kafrun, Syria.

Meriones blackleri kariateni Aharoni, 1932

1932. *Meriones tamaricinus kariateni* Aharoni, Z. Säuget. *7:* 197. Karjeten (Karyatein), Syria.

Meriones blackleri intraponticus Neuhäuser, 1936

1936. *Meriones blackleri intraponticus* Neuhäuser, Z. Säuget. *11:* 159. Tosia, Kostamuni, Paphlagonia, Asia Minor.

Subgenus *PALLASIOMYS* Heptner, 1933

Meriones unguiculatus Milne-Edwards, 1867 Clawed Jird

Approximate distribution of species: Transbaikalia, Chinese Turkestan, Mongolia, Manchuria, Chihli, Northern Shansi, and has been recorded from Northern Kansu, Northern China.

Meriones unguiculatus unguiculatus Milne-Edwards, 1867

1867. *Gerbillus unguiculatus* Milne-Edwards, Ann. Sci. Nat. Zool. *7*, 5: 377. Eul-che-san hao (Ershi-san-hao), about 10 km. north-east of Tschang-kur, Northern Shansi, China.

1903. *Gerbillus koslovi* Satunin, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *7:* 553. Lower Kobdo River, 4,100 ft., Western Mongolia.

1939. *Meriones kurauchii chihfengensis* Mori, Rept. First Sci. Exped. Manchoukuo, *5*, 2, 4: 71. Chihfeng, Jehol, North-Eastern China.

Range: as above, perhaps excepting Manchuria. There are no Manchurian specimens in B.M., and the status of the next is provisional.

Meriones unguiculatus kurauchii Mori, 1930

1930. *Meriones kurauchii* Mori, Annot. Zool. Jap. *12*, 2: 417. Tschingtiatun, Manchuria.

Meriones meridianus Pallas, 1773 — Midday Gerbil (cf. Kuznetzov); Little Chinese Jird

Approximate distribution of species: Northern Caucasus, throughout Russian Turkestan (northern limits roughly Lower Ural, Irgiz steppes, Aral Kara-Kum, Muyun-Kum, Balkash sands). Chinese Turkestan, Kuku Nor, Mongolia, Northern China, states of Shensi, Shansi, Chihli. Kuznetzov (1944) says it occurs in Northern Afghanistan and North-Eastern Persia.

MERIONES MERIDIANUS MERIDIANUS Pallas, 1773

1773. *Mus meridianus* Pallas, Reise Russ. Reichs, *2:* 702. Near Novo-Bogatinsk, Uralsk Region, Kazakstan. Range: Volgo-Ural Steppe.

1848. *Meriones fulvus* Eversmann, Bull. Soc. Imp. Nat. Moscou, *21*, 1: 195. Between Volga and Ural Rivers, probably near Kamysh-Samarian Lakes.

MERIONES MERIDIANUS PSAMMOPHILUS Milne-Edwards, 1871

1871. *Gerbillus psammophilus* Milne-Edwards, Rech. H.N. Mamm. *6:* 144. Suanhwafu (Hsuen-hwa), near Kalgan, Inner Mongolia. New name for:

1867. *Gerbillus brevicaudatus* Milne-Edwards, Ann. Sci. Nat. Zool. Paris, 5, *7:* 377. Not of Cuvier, 1836.

1875. *Gerbillus cryptorhinus* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 108. Kargalik, Chinese Turkestan.

1889. *Gerbillus roborowskii* Büchner, Wiss. Result. Przewalski C.-Asien, Reisen, Zool. *1*, Säugeth.: 63. Nomuchon Gol, Hsinghai (Kuku Nor), Chinese Central Asia.

1908. *Meriones auceps* Thomas, P.Z.S. 640. East of Taiyuenfu, Shansi, China.

1927. *Gerbillus urianchaicus* Vinogradov, Jb. Martjanow Staatsmus, *5*, 1: 41. Ikiottuk, Uriankhai (Urjanchjer), Tannu Tuva, Mongolia.

Range: Mongolia, Chinese Turkestan, Kuku Nor, Shansi, Shensi.

MERIONES MERIDIANUS LEPTURUS Buchner, 1889

1889. *Gerbillus lepturus* Buchner, Wiss. Result. Przewalski C. Asien, Reis. Zool. *1*, Säuget.: 67. Chotan Darjan River, approximately 39° N., Sinkiang, Chinese Central Asia.

MERIONES MERIDIANUS BUCHNERI Thomas, 1909

1909. *Meriones buchneri* Thomas, Ann. Mag. N.H. *3:* 262. Deleun Mountains, a few miles south of Charatsagan Wells, Zungaria.

MERIONES MERIDIANUS NOGAIORUM Heptner, 1927

1927. *Gerbillus meridianus nogaiorum* Heptner, Mater. Pozn. Fauna Nizh. Povolzh, *1:* 32 (37). Terekli-Mekteb, 100–120 km. north-west of Kizljar, Northern Caucasus.

1927. *Gerbillus meridianus nogaiorum* natio *littoralis* Heptner, *loc. cit.* Ulanchol, near Bjelosersk, Kalmuck Province, South-Eastern Russia.

Meriones meridianus penicilliger Heptner, 1933

1933. *Pallasiomys meridianus penicilliger* Heptner, Z. Säuget. *8:* 154. Repetek, on Central Asiatic Railway, Kara-Kum Desert, Turkmenistan (Russian Turkestan). Range: Kara-Kum and Kizil-Kum.

Meriones meridianus shitkovi Heptner, 1933

1933. *Pallasiomys meridianus shitkovi* Heptner, Z. Säuget. *8:* 154. Mirsa-Aral, on left bank of Syr-Darya River, 35 km. north-north-east of Kokand, Usbekistan, Russian Turkestan. Range: Fergana.

Meriones meridianus massagetes Heptner, 1933

1933. *Pallasiomys meridianus massagetes* Heptner, Z. Säuget. *8:* 155. Aralskoje More, north-east coast of Aral Sea, Kazakstan.

Meriones meridianus karelini Kolossow, 1935

1935. *Pallasiomys meridianus karelini* Kolossow, Bull. Soc. Nat. Moscou, *44*, Biol.: 381 (384). Mouth of Emba River, Kazakstan. Range: Lower Rivers Emba and Ural.

Meriones meridianus heptneri Kuznetzov in Bobrinskii, 1944

1944. *Pallasiomys meridianus heptneri* Kuznetzov, Mamm. U.S.S.R. 331. Dosang by Astrakhan, Russia. Range: sands on left bank of Volga delta.

Kuznetzov in Bobrinskii, 1944, *Mamm. U.S.S.R.* 331, quoted a form *Pallasiomys meridianus uschtaganicus* "Rall. 1940", no locality mentioned, which he regards as a synonym of the typical race.

Meriones shawi Duvernoy, 1842 Shaw's Jird

Approximate distribution of species: Morocco, Algeria, Tunis, Libya, Egypt, Palestine.

Meriones shawi shawi Duvernoy, 1842

1842. *Gerbillus shawii* Duvernoy, Mém. Soc. Mus. H.N. Strasbourg, *3*, 2: 22. Oran, Algeria. (Rozet, 1833, Voy. Reg. Alg. *1:* 243, *nom. nud.* Duvernoy, 1841, L'Institut, 400, *nom. nud.*; 1841, P.V. Soc. Philom. Paris, 97: 97, *nom. nud.*)
1856. *Gerbillus sellysii* Pomel, C.R. Acad. Sci. Paris, *42:* 654. Oran, Algeria.
1867. *Gerbillis richardii* Loche, Explor. Sci. Algérie, Zool. Mamm. 104. Boghar, Algeria.
1867. *Gerbillus savii* Loche, Expl. Sci. Algérie, Zool. Mamm., pl. 6. *Lapsus* for *shawii*.
1882. *Meriones trouessarti* Lataste, Le Naturaliste, *2:* 69. Bousaada, Algeria.
1882. *Meriones auziensis* Lataste, Le Naturaliste, *2:* 77. Ouedakarit, near Aumale, Algeria.
1882. *Meriones albipes* Lataste, Le Naturaliste, *2:* 101. Msila, Algeria.
1885. (*Meriones shawi*) var. *laticeps* Lataste, Act. Soc. Linn. Bordeaux, *39:* 269. Province of Constantine, Algeria (no exact locality).
1885. (*Meriones shawi*) var. *longiceps* Lataste, Act. Soc. Linn. Bordeaux, *39:* 269. Tunis.

MERIONES SHAWI SHAWI [*contd.*]

1885. *Meriones shawi* var. *crassibulla* Lataste, Act. Soc. Linn. Bordeaux, *39:* 269. Tebessa, Algeria.

1919. *Meriones isis* Thomas, Ann. Mag. N.H. *3:* 271. Ramleh, near Alexandria, Egypt.

Range: Algeria to Egypt.

MERIONES SHAWI TRISTRAMI Thomas, 1892

1892. *Meriones tristrami* Thomas, Ann. Mag. N.H. *9:* 148. Dead Sea region, Palestine.

MERIONES SHAWI GRANDIS Cabrera, 1907

1907. *Meriones grandis* Cabrera, Bol. Soc. Esp. H.N. *7:* 175. Marrakesh (Morocco City), Morocco.

Meriones arimalius Cheesman & Hinton, 1924

Approximate distribution of species: Central Arabia.

MERIONES ARIMALIUS Cheesman & Hinton, 1924

1924. *Meriones arimalius* Cheesman & Hinton, Ann. Mag. N.H. *14:* 554. Djebel Agoula, Jabrin (Djebrin), Central Arabia.

Meriones libycus Lichtenstein, 1823 Libyan Jird

(For identification of typical race see Thomas, 1919, *Ann. Mag. N.H. 3:* 264.)

Approximate distribution of species: Transcaucasia, Russian Turkestan (north to Lower Ural, Ust-Urt, Kizil-Kum, Lower River Chu, and Semirechyia (Kuznetzov)); Chinese Turkestan; Baluchistan; Afghanistan, Persia, Iraq, Palestine, Syria, Arabia; Egypt, Libya, Algeria, to Rio de Oro.

MERIONES LIBYCUS LIBYCUS Lichtenstein, 1823

1823. *Meriones libycus* Lichtenstein, Verz. Doubl. Mus. Berlin, 5. Near Alexandria, Egypt.

1842. *Meriones melanurus* Ruppell, Abhandl. Senckenb. Mus. *3*, 2: 95. Alexandria, Egypt.

1867. *Gerbillus guyonii* Loche, Explor. Sci. Algérie, Zool. Mamm. 103. Ain-el-Atrech, Algerian Sahara.

1867. *Gerbillus schousboeii* Loche, Explor. Sci. Algérie, Zool. Mamm. 105. Ras Nili, Southern Algeria.

1867. *Gerbillus renaultii* Loche, Explor. Sci. Algérie, Zool. Mamm. 106. Messad, Algeria.

1882. *Meriones gactulus* Lataste, Le Naturaliste, *2:* 83. Tilremt, between Laghouat and Bennian, Algeria.

Range: Algeria to Egypt.

MERIONES LIBYCUS ERYTHROURUS Gray, 1842

1842. *Gerbillus erythrourus* Gray, Ann. Mag. N.H. *10:* 266. Sahlabad, about 12 miles south-west of Kandahar, Afghanistan. Range: Baluchistan, Afghanistan, Persia.

MERIONES LIBYCUS CAUCASIUS Brandt, 1855

1855. *Meriones caucasius* Brandt, Bull. Phys. Math. Acad. Sci. St. Pétersb. *14*, 5: 79, and pl. k, figs. 5–8. Schirin Kum Steppe, 39°55′ N., 47°45′ E., Saljany district, Eastern Transcaucasia.

1896. *Gerbillus caucasicus* Satunin, Zool. Jahrb. Syst. *9:* 300. Accidental renaming of *caucasius*.

MERIONES LIBYCUS COLLIUM Severtzov, 1873

1873. *Meriones* (*Brombomys*) (sic) *collium* Severtzov, Mem. Soc. Amis. Nat. Moscou, *8*, 2: 83. Between Koksu and Ili Rivers, Semirechyia. Not listed by Kuznetzov (1944). Perhaps will supersede one of the later-named Russian forms.

MERIONES LIBYCUS EVERSMANNI Bogdanov, 1889

1889. *Gerbillus eversmanni* Bogdanov, in Wiss. Result. Przewalski Cent. Asian, Reisen., Zool. *1*, Säugeth.: 58. Novo-Alexandrowsk, east coast Caspian Sea. Range: Lower Ural, Manguishlak, Ust-Urt districts.

MERIONES LIBYCUS TURFANENSIS Satunin, 1903

1903. *Gerbillus turfanensis* Satunin, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *7*, 4: 557. Luktschen, Turfan Oasis, Sinkiang, Chinese Turkestan.

MERIONES LIBYCUS MARIAE Cabrera, 1907

1907. *Meriones mariae* Cabrera, Bol. Soc. Esp. H.N. *7:* 177. Tarfaya, Cape Juby, Rio de Oro, North-West Africa.

MERIONES LIBYCUS AQUILO Thomas, 1912

1912. *Meriones erythrourus aquilo* Thomas, Ann. Mag. N.H. *9:* 395. One hundred miles east of Gutschen, Zungaria, 4,000 ft., Chinese Central Asia.

MERIONES LIBYCUS CAUDATUS Thomas, 1919

1919. *Meriones libycus caudatus* Thomas, Ann. Mag. N.H. *3:* 267. Tamari-Ferdjan, 10 km. south of Sokna, Libya.

MERIONES LIBYCUS SYRIUS Thomas, 1919

1919. *Meriones syrius* Thomas, Ann. Mag. N.H. *3:* 268. Karyatein (Karjaten), Syrian Desert.

1924. *Meriones syrius edithae* Cheesman & Hinton, Ann. Mag. N.H. *14:* 555. Khudud Spring, Hufuf (El Hofuf), Arabia.

1924. *Meriones syrius evelynae* Cheesman & Hinton, *loc. cit.* Khorasan Spring, Hufuf, Arabia.

Range: Syria, Palestine, Iraq, Arabia.

MERIONES LIBYCUS CONFALONIERII de Beaux, 1931

1931. *Meriones libycus confalonierii* de Beaux, Ann. Mus. Stor. Nat. Genova, *55:* 384. El Agheila, Libya.

MERIONES LIBYCUS LEGERI Aharoni, 1932

1932. *Meriones erythrourus legeri* Aharoni, Z. Säuget. *7:* 202. Wadi el Abjad, south-west of Beersheba, Palestine.

MERIONES LIBYCUS MAXERATIS Heptner, 1933

1933. *Pallasiomys erythrourus maxeratis* Heptner, Z. Säuget. *8:* 152. Kurota Gorge, near Tschakan Kala on Tschandyr River, Kopet-Dag, Transcaspia.

MERIONES LIBYCUS MARGINIAE Heptner, 1933

1933. *Pallasiomys erythrourus marginiae* Heptner, Z. Säuget. *8:* 153. Bairam Ali, Merv Oasis, 15 miles east of Merv, Turkmenistan. Range: valley of River Murgab.

MERIONES LIBYCUS OXIANUS Heptner, 1933

1933. *Pallasiomys erythrourus oxianus* Heptner, Z. Säuget. *8:* 153. Husar, south of Karschi, Bokhara district, Russian Turkestan.

MERIONES LIBYCUS SOGDIANUS Heptner, 1933

1933. *Pallasiomys erythrourus sogdianus* Heptner, Z. Säuget. *8:* 153. Mirsa-Aral, left bank of Syr-Darya, 35 km. north-north-east of Kokand, Fergana Valley, Russian Turkestan.

Meriones crassus Sundevall, 1842 Sundevall's Jird

Approximate distribution of species: Algeria, Libya and Egypt (south to Sudan and Asben); Arabia, Sinai, Palestine, Persia, Iraq, Afghanistan, Indian North-West Frontier, to extreme south Russian Turkestan.

MERIONES CRASSUS CRASSUS Sundevall, 1842

1842. *Meriones crassus* Sundevall, K. Sv. Vetensk. Akad. Handl. 233. Fons Moses (Ain Musa), Sinai.

1912. *Meriones crassus pallidus* Bonhote, Abstr. P.Z.S. 3; P.Z.S. 226. Atbara, Sudan.

1919. *Meriones pallidus tripolius* Thomas, Ann. Mag. N.H. *3:* 265. Gebel Limhersuk, near Sokna, Libya.

1919. *Meriones pelerinus* Thomas, Ann. Mag. N.H. *3:* 266. Tebuk, on Hedjaz Railway, Northern Arabia.

1924. *Meriones ismahelis* Cheesman & Hinton, Ann. Mag. N.H. *14:* 553. Hufuf (El Hofuf), Eastern Arabia.

Range: Sinai, Arabia, Egypt, Libya, Sudan, Algeria.

MERIONES CRASSUS SWINHOEI Scully, 1881

1881. *Gerbillus swinhoei* Scully, Ann. Mag. N.H. *8:* 228. Gatai, between Kandahar and Kojak Pass, about 10 miles north of Chaman, Afghanistan. Range: to Waziristan, Indian North-West Frontier.

MERIONES CRASSUS LONGIFRONS Lataste, 1884

1884. *Meriones longifrons* Lataste, P.Z.S. 88. Jeddah (Djida), Western Arabia.

MERIONES CRASSUS CHARON Thomas, 1919

1919. *Meriones charon* Thomas, Ann. Mag. N.H. *3:* 269. Mound of Susa, Ahwaz, Persia. Range: Persia, Iraq.

MERIONES CRASSUS SACRAMENTI Thomas, 1922

1922. *Meriones sacramenti* Thomas, Ann. Mag. N.H. *10:* 552. Ten miles south of Beersheba, Palestine.

MERIONES CRASSUS ZARUDNYI Heptner, 1937

1937. *Meriones zarudnyi* Heptner, Bull. Soc. Nat. Moscou, Biol. *46:* 189, 191. Kushka (Kuschkinsk), Afghan frontier of Russian Turkmenistan. Range: to North-Western Persia (Kuznetzov).

Unidentified; and not specifically identifiable from description:

Meriones (Pallasiomys) iranensis Goodwin, 1939, Amer. Mus. Nov. 1050, 3. Dasht, village on the headwaters of Gurgan River, 3,200 ft., Persia.

Genus **PSAMMOMYS** Cretzschmar, 1828

1828. *Psammomys* Cretzschmar, Rüppell Atlas, 56. *Psammomys obesus* Cretszchmar.

1 species: *Psammomys obesus*, page 647

Psammomys obesus Cretzschmar, 1828 Fat Sand Rat

Approximate distribution of species: Algeria, Tunis, Libya, Egypt, south just into the Sudan; Palestine, Arabia.

Of nine supposed races, *vexillaris*, *edusa* and *dianae* are a little group of small forms (or individuals) in which the occipitonasal length of the skull does not exceed 37 mm. in our material; *dianae* has this length not less than 35.8 mm. and *vexillaris* (with *edusa*) has it not exceeding 34.2 mm. In the remainder, the adult occipitonasal length is rarely less than 39 mm. (four exceptions in 41 skulls). The form *nicolli* differs from the other large races in its dark colour. Of the paler large races *terrae-sanctae* has the largest individuals (occipitonasal about 45–46.6 mm.), and it is very difficult to believe that the remainder are anything but one race, *P. obesus obesus*. The largest specimen, which is very old, has the occipitonasal length 44.3 mm.

PSAMMOMYS OBESUS OBESUS Cretzschmar, 1828

1828. *Psammomys obesus* Cretzschmar, Rüppell Atlas, 58, pl. 22. Near Alexandria, Egypt.

(?) 1881. *Psammomys roudairei* Lataste, Le Naturaliste, Paris, *1:* 492. Msila and l'Oued Magra, north of Chott du Hodna, also Tilrent, between Mzale and Laghouat, Algeria.

(?) 1902. *Psammomys tripolitanus* Thomas, P.Z.S. *2*: 9. Bou Cheifa, coast of Libya.

(?) 1902. *Psammomys algiricus* Thomas, Ann. Mag. N.H. *9:* 363. Biskra, Algeria.

1941. *Psammomys obesus algericus* Ellerman, Fam. Gen. Liv. Rodents, *2:* 538.

Range: Algeria, Tunis, Libya, Egypt, eastwards into Arabia (Safana Desert, Medain Saleh), and Palestine, *fide* Bodenheimer.

PSAMMOMYS OBESUS TERRAESANCTAE Thomas, 1902

1902. *Psammomys obesus terraesanctae* Thomas, Ann. Mag. N.H. *9:* 363. Region of Dead Sea, Palestine.

PSAMMOMYS OBESUS NICOLLI Thomas, 1908

1908. *Psammomys obesus nicolli* Thomas, Ann. Mag. N.H. *2:* 92. Damietta, Northern Egypt.

PSAMMOMYS OBESUS VEXILLARIS Thomas, 1925

1925. *Psammomys vexillaris* Thomas, Ann. Mag. N.H. *16:* 198. Bondjem, Libya.
(?) 1925. *Psammomys vexillaris edusa* Thomas, Ann. Mag. N.H. *16:* 199. Mil Mahases, Chegga, just south of Biskra, Algeria.

PSAMMOMYS OBESUS DIANAE Morrison-Scott, 1939

1939. *Psammomys obesus dianae* Morrison-Scott, Nov. Zool. *41:* 192. Dailami, 20°20′ N. 42° 10′ E., 3,900 ft., Arabia.

Genus **BRACHIONES** Thomas, 1925

1925. *Brachiones* Thomas, Ann. Mag. N.H. *16:* 548. *Gerbillus przewalskii* Buchner.

1 species: *Brachiones przewalskii*, page 618

Brachiones przewalskii Büchner, 1889 Przewalski's Gerbil

Approximate distribution of species: Chinese Turkestan, Mongolia.

BRACHIONES PRZEWALSKII PRZEWALSKII Buchner, 1889

1889. *Gerbillus przewalskii* Büchner, Wiss. Res. Przewalski Cent. Asian, Zool. Th. *1*, Saugeth.: 51. Lob Nor, Chinese Turkestan.

BRACHIONES PRZEWALSKII ARENICOLOR Miller, 1900

1900. *Gerbillus arenicolor* Miller, Proc. Biol. Soc. Washington, *13:* 163. In jungle on Yarkand River, east of Maraldbashi, Chinese Turkestan.

BRACHIONES PRZEWALSKII CALLICHROUS Heptner, 1934

1934. *Brachiones przewalskii callichrous* Heptner, Arch. Mus. Zool. Moscou, *1:* 8. Lower part of valley of Ezsin Gol, Lake Sogo Nor, Western Gobi (41°50′ N., 99° 45′ E.), Mongolia.

Genus **RHOMBOMYS** Wagner, 1841

1841. *Rhombomys* Wagner, Arch. fur Naturg. *7*, 1: 129.
1841. *Rhombomys* Wagner, Gel. Anz. K. Bayer Akad. Wiss. Munchen, *12*, 52: 421. *Rhombomys pallidus* Wagner = *Meriones opimus* Lichtenstein.

1 species: *Rhombomys opimus*, page 619

Rhombomys opimus Lichtenstein, 1823 Great Gerbil

Approximate distribution of species: Russian Turkestan, where it is widely distributed, west to Caspian Sea, east to Semirechyia, north to River Emba, Aral Kara-Kum, Lake Balkash region, etc. Chinese Turkestan, Mongolia, Persia and, according to Kuznetzov, Northern Afghanistan.

Rhombomys opimus opimus Lichtenstein, 1823

1823. *Meriones opimus* Lichtenstein, Eversmann. Reise Buchara, 122. Between Orenburg and Bokhara. (Type locality is Aral Kara-Kum according to Kuznetzov, 1944.)
1841. *Rhombomys pallidus* Wagner, Arch. für Naturg. *7*, 1: 131. "S.E. Russia."
1889. *Gerbillus giganteus* Büchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1*, Säugeth.: 73. Ebi-nor, Zungaria, Chinese Central Asia.
1926. *Gerbillus opimus dalversinicus* Kashkarov, Key to Rodents of Turkestan, 25, (publ. Usbekistan Exp. Stat. Plant. Prot.) Dalversinskaia Steppe, Russian Asia.

Range: Lowlands of Kazakstan, Kara-Kum, Kizil Kum, to Zungaria.

Rhombomys opimus nigrescens Satunin, 1903

1903. *Gerbillus opimus nigrescens* Satunin, Ann. Mus. Zool. St. Petersb. *7:* 560. Lake Orok-Nor, Gobi Altai, Mongolia.
1911. *Rhombomys opimus alaschanicus* Matschie, Säuget. in Futterer, Durch. Asien, *3:* 12. Alashan, Inner Mongolia.

Rhombomys opimus fumicolor Heptner, 1933

1933. *Rhombomys opimus fumicolor* Heptner, Z. Säuget. *8:* 152. Kokand, Fergana, Russian Turkestan.

Rhombomys opimus sargadensis Heptner, 1939

1939. *Rhombomys opimus sargadensis* Heptner, Bull. Soc. Nat. Moscou, Sect. Biol. *48*, 4: 100, 103. Talab, North-Eastern Persia.

Rhombomys opimus pevzovi Heptner, 1939

1939. *Rhombomys opimus pevzovi* Heptner, Bull. Soc. Nat. Moscou, Sect. Biol. *48*, 4: 101, 103. Sa-tchou, 40° N., 90° E., Chinese Turkestan.

Rhombomys opimus sodalis Goodwin, 1939

1939. *Rhombomys opimus sodalis* Goodwin, Amer. Mus. Nov. 1050,.4. Maravih, Incha district, Elburz Mountains, about 2,000 ft., Persia.

Subfamily Myospalacinae

Genus: *Myospalax*, page 649

Genus **MYOSPALAX** Laxmann, 1769

1769. *Myospalax* Laxmann, Sibirische Briefe, 75. *Mus myospalax* Laxmann.
1792. *Myotalpa* Kerr, Anim. Kingd. *1*, Mamm. Syst. Cat. Nos. 516, 517, 520. *Mus aspalax* Pallas.

MYSOPALAX [*contd.*]

1827. *Siphneus* Brants, Het Gesl. d. Muizen, 19. *Mus aspalax* Pallas.

1940. *Eospalax* G. Allen, Mamm. China & Mongolia, N.H. Cent. Asia, *11*, 1, vii, nom. nud., 2: 921. *Myospalax fontanieri* Milne-Edwards. Valid as a subgenus.

1941. *Zokor* Ellerman, Fam. Gen. Liv. Rodents, *2:* 541. *Siphneus fontanieri* Milne-Edwards.

5 species:

Myospalax fontanieri, page 650
Myospalax myospalax, page 651
Myospalax psilurus, page 651
Myospalax rothschildi, page 651
Myospalax smithi, page 651

For figures of the skulls illustrating the difference between the two subgenera see Ellerman (1941, 544).

A re-examination of the dentition of all the material in the British Museum indicates that the characters given by Russian authors and by G. Allen for the species of *Myospalax sensu stricto* seem to be inconstant. A constant dental character which separates *psilurus* from *myospalax* as here understood is the closed triangles of the lower M 2 and M 3, which are present in *psilurus* and absent in *myospalax* in British Museum material.

Russian authors also retain a species which they now call *M. aspalax* (formerly known as *dybowskii*). Ognev makes *armandi* a synonym of *aspalax*. There seems no reason why this should not be regarded as a distinct race of *myospalax*. In the British Museum there are specimens labelled "Altai" which is within the range of the typical race, in which the upper molars are like those of *aspalax* as figured by Kuznetzov.

Subgenus *EOSPALAX* G. Allen, 1940

Myospalax fontanieri Milne-Edwards, 1867 Common Chinese Zokor

Approximate distribution of species: China, from Kuku Nor, Kansu, Szechuan, Shensi and Shansi to Chihli.

MYOSPALAX FONTANIERI FONTANIERI Milne-Edwards, 1867

1867. *Siphneus fontanierii* Milne-Edwards, Ann. Sci. Nat. *7*, 5: 376. Near Pekin, Chihli, China.

1912. *Myospalax fontanus* Thomas, Ann. Mag. N.H. *9:* 93. Ning-wu-fu, Shansi, China.

Range includes Shensi, in part.

MYOSPALAX FONTANIERI CANSUS Lyon, 1907

1907. *Myotalpa cansus* Lyon, Smiths. Misc. Coll. *50:* 134. Taocheo (Taochow) Kansu, China.

1909. *Myotalpa rufescens* J. Allen, Bull. Amer. Mus. N.H. *26:* 428. Foot of Taipashiang, Shensi, China.

1911. *Myospalax cansus shenseius* Thomas, Abstr. P.Z.S. 5; P.Z.S. 178. Yulinfu, Shensi, China.

Range: as above, southwards into Szechuan.

Myospalax fontanieri baileyi Thomas, 1911
1911. *Myospalax baileyi* Thomas, Ann. Mag. N.H. *8:* 727. Rama Song, between Nagchuka and Tatsienlu, Western Szechuan, China.

Myospalax fontanieri kukunoriensis Lönnberg, 1926
1926. *Myospalax kukunoriensis* Lönnberg, Arkiv for Zoologi, *18a*, 21: 9. Eastern end of Lake Kuku Nor, Chinese Central Asia.

Myospalax rothschildi Thomas, 1911 Rothschild's Zokor

Approximate distribution of species: Kansu and Hupeh, China. A small species, with small teeth; occurring with the last.

Myospalax rothschildi Thomas, 1911
1911. *Myospalax rothschildi* Thomas, Ann. Mag. N.H. *8:* 722. Forty miles south-east of Taochow, Kansu, China.
1926. *Myospalax minor* Lönnberg, Arkiv for Zoologi, *18a*, 21: 6. Near Ashuen, Minshan, Kansu, China.
Range: Kansu and Hupeh.

Myospalax smithi Thomas, 1911 Smith's Zokor

Approximate distribution of species: Kansu, China. This species differs from its allies in having the supraorbital ridges fused in the adult to form a sagittal ridge.

Myospalax smithi Thomas, 1911
1911. *Myospalax smithii* Thomas, Ann. Mag. N.H. *8:* 720. Thirty miles south-east of Taochow, Kansu, China.

Subgenus *MYOSPALAX* Laxmann, 1769

Myospalax psilurus Milne-Edwards, 1874 Manchurian Zokor

Approximate distribution of species: Transbaikalia and Ussuri regions of Eastern Siberia, North-Eastern China (Chihli, Shantung), and Manchuria.

Myospalax psilurus Milne-Edwards, 1874
1874. *Siphneus psilurus* Milne-Edwards, Rech. Mamm. 126. South of Pekin, Chihli, China.
1897. *Siphneus spilurus* Trouessart, Cat. Mamm. Viv. Foss. 568 (*errorim*).
1912. *Myospalax epsilanus* Thomas, Ann. Mag. N.H. *9:* 94. Khingan Mountains, 3,400 ft., Manchuria.

Myospalax myospalax Laxmann, 1773 Altai Zokor

Approximate distribution of species: Siberian Altai region, "areas round Altai as far north as Novosiribsk where it is rare, a narrow strip along left bank of Ob into Naruim region . . . and west almost to Semipalatinsk, and Tarbagatai Mountains, as far west as Sergiopol" (Kuznetzov). As here understood also Transbaikalia, perhaps Mongolia (? or Northern Shansi, China), and apparently Manchuria.

MYOSPALAX MYOSPALAX MYOSPALAX Laxmann, 1773

1773. *Mus myospalax* Laxmann, K. Svenska Vet. Akad. Handl. Stockholm, *34:* 134. Sommaren, near Paniuscheva, Alei River, 100 km. from Barnaul, Siberia.

1873. *Myospalax laxmanni* Sherskey, Bull. Soc. Nat. Moscow, 431. (Reference from Ognev.)

Range: from Barnaul along Altai foothills to Ust-Kamenogorsk.

MYOSPALAX (?) MYOSPALAX ASPALAX Pallas, 1776

1776. *Mus aspalax* Pallas, Reise Russ. *3:* 692. Dauuria, Transbaikalia (Doldogo, on Onon River, below Atchinsk, according to note left by Chaworth-Musters).

1811. *Spalax talpinus* Pallas, Zoogr. Ross. Asiat. *1*, 159. Renaming of *Mus aspalax.*

1822. *Lemmus zokor* Desmarest, Mamm. 288.

?1867. *Siphneus armandii* Milne-Edwards, Ann. Sci. Nat. *7:* 376. "High Plateau of Mongolia," or perhaps Northern Shansi, China. Ognev makes this a synonym of *aspalax.*

1873. *Myospalax dybowskii* Sherskey, Bull. Nat. Moscou, 430. Irkutsk region, Eastern Siberia.

Range: Aksha, Onon and Borzya steppes on right bank of River Onon, Southern Transbaikalia, and into Mongolia.

MYOSPALAX MYOSPALAX KOMURAI Mori, 1927

1927. *Myospalax komurai* Mori, Annot. Zool. Jap. *11*, 2: 108. Shiheigai, Southern Manchuria. (Described as allied to *armandii.*)

MYOSPALAX MYOSPALAX TARBAGATAICUS Ognev, 1936

1936. *Myospalax myospalax tarbagataicus* Ognev, Abstr. Works. Zool. Inst. Moscou, State Univ. *3:* 81. Znamenka, Sergiopolsk region, east of Lake Balkash, Western Tarbagatai, Russian Central Asia.

MYOSPALAX MYOSPALAX INCERTUS Ognev, 1936

1936. *Myospalax myospalax incertus* Ognev, Abstr. Works. Zool. Inst. Moscou State Univ. *3:* 82. Katon-Karagai (Station Allaiskaja), Southern Russian Altai.

SUBFAMILY Microtinae

See Hinton, 1926, *Monograph of Voles and Lemmings, 1* (British Museum).

Genera: *Alticola*, page 670
Arvicola, page 676
Blanfordimys, page 681
Clethrionomys, page 659
Dicrostonyx, page 653
Dolomys, page 675
Ellobius, page 656
Eothenomys, page 667
Hyperacrius, page 674
Lagurus, page 675
Lemmus, page 654
Microtus, page 690
Myopus, page 654
Pitymys, page 681
Prometheomys, page 659

The genera are slightly reduced in number from those recognized by Hinton. Osgood and G. Allen have shown that owing to intermediate forms *Anteliomys* cannot

be distinguished from *Eothenomys*, a view which is supported here. I have suggested that *Pitymys* might be extended to cover those Voles (*Phaiomys*, *Neodon*, etc.) which have the first lower molar with only three closed triangles; the alternative to this seems to be to treat them all, including *Pitymys*, as subgenera of *Microtus*, which is done by Russian authors. (If this were done, *Blanfordimys* would also be a subgenus of *Microtus*.) *Lasiopodomys* and *Proedromys* are fairly clearly not of more than subgeneric value when compared with *Microtus*.

Genus **DICROSTONYX** Gloger, 1841

1841. *Dicrostonyx* Gloger, Hand. u. Hilfsb. Nat. *1:* xxxi, 97. An American species, probably *Mus hudsonius* Pallas.
1830. *Cuniculus* Wagler, Syst. Nat. Amphib. 21. Not of Brisson, 1762, nor Gronovius, 1763, nor Mayer, 1790.
1855. *Misothermus* Hensel, Z. Deutsch Geol. Gesellsch. *7:* 492. *Myodes torquatus* Pallas.
1881. *Borioikon* Poliakov, Mem. Acad. Imp. Sci. St. Pétersb. *29*, 2: Suppl. 29. (*N.V.* Reference according to Neave.) Based on *torquatus*.

1 species in the area covered by this list:

Dicrostonyx torquatus, page 653

Dicrostonyx torquatus Pallas, 1779 Arctic Lemming

Approximate distribution of species: Arctic regions of U.S.S.R. from east shore of White Sea eastwards to Anadyr region and Bering Straits; Novaya Zemlya and other islands in Arctic Ocean; probably also in Arctic North America.

Dicrostonyx torquatus torquatus Pallas, 1779

1779. *Mus torquatus* Pallas, Nov. Spec. Quad. Glir. Ord. 77. Region of mouth of River Ob, North-Western Siberia.
1779. *Mus lenensis* Pallas, Nov. Spec. Quad. Glir. Ord. 195. Range: from White Sea eastwards at least to Taimyr Peninsula.

Dicrostonyx torquatus lenae Kerr, 1792

1792. *Mus lenae* Kerr, Anim. Kingd. 242. "Border of the icy sea, especially where the Lena falls into it."
(?) 1914. *Dicrostonyx chionopaes* G. Allen, Proc. New England Zool. Club, *5:* 62. Nijni Kolymsk, Kolyma River mouth, North-Eastern Siberia.

Range: Kuznetzov gives the range for *chionopaes* as lower Rivers Lena, Indigirka, and Kolyma, Anadyr region, North-Eastern Siberia. Chaworth-Musters left a note to the effect that *Mus lenae* Kerr, which is a valid name, was available in this species, and it probably should supersede *chionopaes*.

Dicrostonyx torquatus ungulatus Von Baer, 1841

1841. *Lemmus ungulatus* Von Baer, Von Baer & Helmersen, Beitrage, *4:* 283. Island of Novaya Zemlya.
1853. *Myodes torquatus* var. *pallida* Middendorff, Sibir. Reise, *2*, 2: 93.

Genus **MYOPUS** Miller, 1910

1910. *Myopus* Miller, Smiths. Misc. Coll. *52:* 497. *Myodes schisticolor* Lilljeborg.

1 species: *Myopus schisticolor*, page 654

Myopus schisticolor Lilljeborg, 1844 Wood Lemming

Approximate distribution of species: Norway, Sweden, Finland, Northern Russia (Karelia, Murmansk, Gorki provinces), Northern Siberia, including Ob Plain, Altai, Sayan, Lake Baikal region, Transbaikalia, Yakutsk, Amur region to Sea of Okhotsk, Kolyma region; has been recorded from Sakhalin. Mongolia.

Myopus schisticolor schisticolor Lilljeborg, 1844

1844. *Myodes schisticolor* Lilljeborg, Ofvers. Vetensk. Akad. Förh. Stockholm, *1:* 33. Near Lillehammer, Mjosen, Gudbrandsdal, Norway. Range: Norway, Sweden, Finland, to Kola Peninsula and Karelia, Russia.

Myopus schisticolor morulus Hollister, 1912

1912. *Myopus morulus* Hollister, Smiths. Misc. Coll. *60*, 14: 1. Tapucha, Altai Mountains, 125 miles south-east of Bijsk, 6,875 ft., Siberia.

Myopus schisticolor saianicus Hinton, 1914

1914. *Myopus saianicus* Hinton, Ann. Mag. N.H. *13:* 343. Sayan Mountains, 100 miles west of Lake Baikal, 2,200 ft., Siberia. Range: Sayan Mountains, to Mongolia.

Myopus schisticolor thayeri G. Allen, 1914

1914. *Myopus thayeri* G. Allen, Proc. New England Zool. Club, *5:* 58. Nijni Kolymsk, near mouth of Kolyma River, North-Eastern Siberia.

Myopus schisticolor middendorffi Vinogradov, 1922

1922. *Myopus middendorffi* Vinogradov, Ann. Mus. Zool. Acad. St. Pétersb. *23:* 374, 512. Aldoma River, near Ayan, west coast Sea of Okhotsk, Eastern Siberia. Range: Yenesei basin, Baikal area, Transbaikalia, Amur region.

Myopus schisticolor vinogradovi Skalon & Rajewski, 1940

1940. *Myopus schisticolor vinogradovi* Skalon & Rajewski, Nauch. Metodich. Zap. *7:* 193–195. (*N.V.*) Type from River Sosva (Kuznetzov). Range: Ob Plain, Western Siberia.

Genus **LEMMUS** Link, 1795

1795. *Lemmus* Link, Zool. Beytr. *1*, 2: 75. *Mus lemmus* Linnaeus.

1811. *Myodes* Pallas, Zoogr. Ross. Asiat. *1:* 172. Based on ten species, one of which was *Mus lemmus*.

1811. *Hypudaeus* Illiger, Prodr. Syst. Mamm. et Avium, 87–88. Based on three species, one of which was *Mus lemmus*.

2 species: *Lemmus lemmus*, page 655
Lemmus sibiricus, page 655

There are two well marked species groups in this genus, *L. lemmus*, the first-named, with a highly specialized black and yellow colour pattern, and the remainder, which have less specialized colour pattern. Hinton (1926, 193) suggested that all named forms of the second group might prove to be subspecies of *L. obensis* (which is antedated by the North American *L. trimucronatus* Richardson, 1825). But Chaworth-Musters left notes to the effect that the prior name for the second species is *Lemmus sibiricus* Kerr, 1792. Vinogradov and Bobrinskii recognize four species in the U.S.S.R. (*lemmus*, *obensis*, *chrysogaster*, *amurensis*); *chrysogaster* was originally named as a race of *obensis* and is made so by Ognev in his latest volume; that author, however, retains *amurensis* as distinct. None of these forms seem to occur together, and I am provisionally listing them all as races of the first-named *L. sibiricus*.

See also Ellerman, 1949, *Ann. Mag. N.H. 2:* 893–894.

Chaworth-Musters also left notes to the effect that the prior name for the Kamtchatka Lemming is *Myodes kittlitzi* Middendorf, 1853, and this seems to be a valid name.

Lemmus lemmus Linnaeus, 1758 Norway Lemming

Approximate distribution of species: Norway, Sweden, Finland (Hinton), to Kola Peninsula, North-Western Russia.

Lemmus lemmus Linnaeus, 1758

1758. *Mus lemmus* Linnaeus, Syst. Nat. 10th ed. *1:* 59. Mountains of Lappmark, Sweden.
1820. *Lemmus borealis* Nilsson, Skand. Faun. *1:* 185. Substitute for *lemmus*.
1822. *Lemmus norvegicus* Desmarest, Mamm. *2:* 287. Norway.

Lemmus sibiricus Kerr, 1792 Siberian Lemming

Approximate distribution of species, as here understood: Arctic U.S.S.R., from White Sea eastwards to Anadyr region and Kamtchatka, including Novaya Zemlya and other islands in Arctic Ocean; also Upper Amur, Northern and Eastern Transbaikalia, and south of Verhoiansk Range, Siberia. Also variously in Arctic North America.

Lemmus sibiricus sibiricus Kerr, 1792

1792. *Mus lemmus sibiricus* Kerr, Anim. Kingd. 241. Northern parts of Uralian chain of mountains and on the River Obi, Siberia.
1815. *Hypudaeus migratorius* Illiger, Abh. Preuss. Akad. Wiss. *1804–11:* 59. Russia and Siberia.
1827. *Lemmus obensis* Brants, Het. Gesl. d. Muizen, 55. Mouth of Ob River, Siberia.
1850. *Cuniculus iterator* Gistel in Gistel & Bromme, Handb. Nat. 248. Russian Lapland. A synonym of *obensis* according to Strand, 1942, Folia Zool. Hydrobiol. Riga, *2:* 382.
1924. *Lemmus obensis bungei* Vinogradov, Ann. Mag. N.H. *14:* 188. Mouth of Lena River. A synonym according to Hinton, but a valid form according to Kuznetzov. Range: Northern Yakutia.

LEMMUS SIBIRICUS SIBIRICUS [*contd.*]

"*Myodes lemmus* var. *minor*" Pallas, 1811, Zoogr. Rosso-Asiat. *1:* 173, seems not to be a valid name; the author is merely stating that the animals vary in size. Range: tundra from neck of White Sea to Taimyr Peninsula, and if *hungei* is the same, also Northern Yakutia.

LEMMUS SIBIRICUS KITTLITZI Middendorf, 1853

1853. *Myodes kittlitzi* Middendorf, Reise N.O. Sib. *11*, 2: 107. Kamtchatka.
1925. *Lemmus flavescens* Vinogradov, Ann. Mus. Zool. Acad. Sci. U.S.S.R. *26:* 62. Kamtchatka.
1925. *Lemmus xanthotrichus* "Brandt, MS. name", Vinogradov, Ann. Mus. Zool. Acad. Leningrad, *26:* 62. MS. name placed in synonymy of *flavescens*.

LEMMUS SIBIRICUS CHRYSOGASTER J. Allen, 1903

1903. *Lemmus obensis chrysogaster* Allen, Bull. Amer. Mus. N.H. *19:* 153. Gichiga, west coast Okhotsk Sea, Eastern Siberia.
1914. *Lemmus paulus* G. Allen, Proc. New England Zool. Club, *5:* 60. Kalaschowo, near mouth of Kolyma River, North-Eastern Siberia. Status *fide* Ognev.

LEMMUS (?) SIBIRICUS AMURENSIS Vinogradov, 1924

1924. *Lemmus amurensis* Vinogradov, Ann. Mag. N.H. *14:* 186. Pikan, on Zeya River, a tributary of Amur River, Eastern Siberia. Range: Upper Amur, Transbaikalia (part), south of Verhoiansk Range, Siberia. Russian authors give this form specific rank, with its ally *ognevi*.

LEMMUS SIBIRICUS NOVOSIBIRICUS Vinogradov, 1924

1924. *Lemmus obensis novosibiricus* Vinogradov, Ann. Mag. N.H. *14:* 187. Kotelny and Liakhov Islands, New Siberian Archipelago, Northern Siberia.

LEMMUS (?) SIBIRICUS OGNEVI Vinogradov, 1933

1933. *Lemmus amurensis ognevi* Vinogradov, Tabl. Anal. Faun. U.R.S.S. *10:* Mamm. Rongeurs, 58. Verhoiansk Mountains, Siberia.

Genus **ELLOBIUS** Fischer, 1814

1814. *Ellobius* Fischer, Zoognosia, *3:* 72. *Mus talpinus* Pallas.

3 species: *Ellobius fuscocapillus*, page 658
Ellobius lutescens, page 658
Ellobius talpinus, page 657

These species may be keyed roughly as follows:

1. Supraorbital ridges not fused in adult; interparietal present; palatal foramina less vestigial. *E. talpinus*
Supraorbital ridges fuse to form sagittal crest in adult; normally no interparietal; palatal foramina more vestigial. ——2

2. Sagittal crest reaches lambdoid crest. *E. fuscocapillus*
Sagittal crest not reaching lambdoid crest. *E. lutescens*

Vinogradov in his latest work keeps the last two separate, but in 1944 Kuznetzov treats *lutescens* as a race of *fuscocapillus*, which it well may be.

Ellobius talpinus Pallas, 1770 Northern Mole-Vole

Approximate distribution of species: Southern Russia (Crimea, Ukraine, Ciscaucasia, Kalmyk steppes, Lower Volga, etc.); Russian Turkestan where it is common, south to Turkmenia, thence north about to Altai Steppe, Tomsk district, and Southern Urals; Chinese Turkestan and Mongolia.

Ellobius talpinus talpinus Pallas, 1770

1770. *Mus talpinus* Pallas, Nov. Comm. Acad. Petrop. *14*, 1: 568. Kostytchi, west bank of River Volga, Russia.
1811. *Spalax murinus* Pallas, Zoogr. Ross. As. *1:* 160.
1936. *Ellobius talpinus ciscaucasica* Sviridenko, Abstr. Works. Zool. Inst. Moscow Univ. *3:* 88, *nom. nud.*

Range: Crimea, Southern Ukraine, Northern Caucasus, Lower Volga, Southern Urals.

(The name *ater* which has been listed as a synonym of this form, ex Pallas, 1779, *Nov. Spec. Quad. Glir. Ord.* 179, is a Latin word and not a scientific name.)

Ellobius talpinus rufescens Eversmann, 1850

1850. *Georychus rufescens* Eversmann, Estestvennaya Istoriya Orenburgskago Kraya, *2:* 175. Steppes to the east of the River Ural.

Ellobius talpinus tancrei Blasius, 1884

1884. *Ellobius tancrei* Blasius, Zool. Anz. *7:* 197. Bukhtarma Valley, Siberian Altai Mountains. Range includes Mongolian Altai (specimens in B.M.).

Ellobius talpinus fusciceps Thomas, 1909

1909. *Ellobius fusciceps* Thomas, Ann. Mag. N.H. *3:* 265. Samarkand, Russian Turkestan.

Ellobius talpinus albicatus Thomas, 1912

1912. *Ellobius albicatus* Thomas, Ann. Mag. N.H. *9:* 401. South-Eastern Hami Mountains, Chinese Turkestan.

Ellobius talpinus coenosus Thomas, 1912

1912. *Ellobius coenosus* Thomas, Ann. Mag. N.H. *9:* 402. Muzart Valley, Chinese Tianshan.

Ellobius talpinus ursulus Thomas, 1912

1912. *Ellobius fusciceps ursulus* Thomas, Ann. Mag. N.H. *9:* 403. South side Barlik Mountains, Zungaria, Chinese Central Asia. Range: to Djarkent, Semirechyia.

ELLOBIUS TALPINUS KASHTCHENKOI Thomas, 1912
1912. *Ellobius kashtchenkoi* Thomas, Ann. Mag. N.H. *9:* 404. Lokot, Zmeinogorsk Steppe, Tomsk district, Western Siberia.

ELLOBIUS TALPINUS TRANSCASPIAE Thomas, 1912
1912. *Ellobius talpinus transcaspiae* Thomas, Ann. Mag. N.H. *9:* 405. Sultan Bent, near Ashabad, Transcaspia.

ELLOBIUS TALPINUS LARVATUS G. Allen, 1924
1924. *Ellobius larvatus* G. Allen, Amer. Mus. Nov. 133, 11. Artsa Bogdo, 6,500 ft., Mongolia.

ELLOBIUS TALPINUS ORIENTALIS G. Allen, 1924
1924. *Ellobius orientalis* G. Allen, Amer. Mus. Nov. 133, 12. Iren Dabasu, Eastern Mongolia.

ELLOBIUS TALPINUS OGNEVI Dukelskaja, 1927
1927. *Ellobius talpinus ognevi* Dukelskaja, Bull. Univ. Asia Cent. *15:* 71. Near Bokhara, Russian Turkestan.

Ellobius fuscocapillus Blyth, 1843 Afghan Mole-Vole

Approximate distribution of species: Baluchistan, Afghanistan, Persia, Kopet-Dag Mountains, South-Western Russian Turkestan.

ELLOBIUS FUSCOCAPILLUS Blyth, 1843
1842. *Georychus fuscocapillus* Blyth, J. Asiat. Soc. Bengal, *10:* 928, *nom. nud.* 1843, J. Asiat. Soc. Bengal, *11:* 887. Quetta, Baluchistan.
1887. *Ellobius intermedius* Scully, J. Asiat. Soc. Bengal, *56:* 73. Herat, Afghanistan.
1928. *Ellobius farsistani* Ugarov, Acta Univ. Tashkent, *8a,* 4: 12. Kopet-Dag, 45 versts south of Karakala, Russian Turkestan.
Range: as above. In Persia, probably eastern parts only (cf. Kuznetzov).

Ellobius lutescens Thomas, 1897

Approximate distribution of species: Transcaucasia, Eastern Asia Minor, Persia. Perhaps composed of further races of *E. fuscocapillus.*

ELLOBIUS LUTESCENS LUTESCENS Thomas, 1897
1897. *Ellobius lutescens* Thomas, Ann. Mag. N.H. *20:* 308. Van, Kurdistan, Eastern Asia Minor. Range: to Transcaucasia, and Kazvin in Persia.

ELLOBIUS LUTESCENS WOOSNAMI Thomas, 1905
1905. *Ellobius woosnami* Thomas, Abstr. P.Z.S. 23; P.Z.S. 526. Dumbeneh, 50 miles north of Isfahan, Persia.

ELLOBIUS LUTESCENS LEGENDREI Goodwin, 1940
1940. *Ellobius fuscocapillus legendrei* Goodwin, Amer. Mus. Nov. 1082, 9. Turkmen Plains, about 60 km. east of Astrabad, sea level, Persia. From description apparently belongs with *lutescens.*

Genus **PROMETHEOMYS** Satunin, 1901

1901. *Prometheomys* Satunin, Zool. Anz. *24:* 572. *Prometheomys schaposchnikowi* Satunin.

1 species: *Promctheomys schaposchnikowi*, page 659

Prometheomys schaposchnikowi Satunin, 1901 Long-clawed Mole-Vole

Approximate distribution of species: Caucasus Mountains, from Black Sea coast to Georgian Military Road, South-Eastern Russia.

PROMETHEOMYS SCHAPOSCHNIKOWI Satunin, 1901

1901. *Prometheomys schaposchnikowi* Satunin, Zool. Anz. *24:* 574. Alpine zone of Central Caucasus.

Genus **CLETHRIONOMYS** Tilesius, 1850

1850. *Clethrionomys* G. Tilesius, Isis, *2*: 28. *Mus rutilus* Pallas.
1874. *Evotomys* Coues, Proc. Acad. Nat. Sci. Philadelphia, 186. *Mus rutilus* Pallas.
(?) 1898. *Aschizomys* Miller, Proc. Acad. Nat. Sci. Philadelphia, 369. *Aschizomys lemminus* Miller.
1900. *Craseomys* Miller, Proc. Washington Acad. Sci. *2:* 87. *Hypudaeus rufocanus* Sundevall.
1900. *Euotomys* Schulze, Z.f. Naturwiss, *73:* 203.
1905. *Phaulomys* Thomas, Ann. Mag. N.H. *15:* 493. *Evotomys smithii* Thomas.
1911. *Caryomys* Thomas, Abstr. P.Z.S. London, 4. *Microtus* (*Eothenomys*) *inez* Thomas (probably based on young specimens of *Clethrionomys rufocanus shanseius* Thomas).
1935. *Neoaschizomys* Tokuda, Mem. Coll. Sci. Kyoto, *10b:* 242. (*N.V.* Reference correct according to Neave.) *Neoaschizomys sikotanensis* Tokuda.

3 Palaearctic species:

Clethrionomys glareolus, page 662
Clethrionomys rufocanus, page 665
Clethrionomys rutilus, page 660

In addition to these, the following named forms may belong in this genus:

1898. *Aschizomys lemminus* Miller, Proc. Acad. Nat. Sci. Philadelphia, 369. Kelsey Station, Plover Bay, Bering Strait, North-Eastern Siberia. Hinton (1926) suggests it might be a species of *Clethrionomys*. More recently Miller, 1940, J. Mamm. *21:* 94–95, has come to the same conclusion. Vinogradov and Kuznetzov adopt it as a valid species, which they refer, as a subgenus, to the genus *Alticola*, quoting it from some six places in Eastern Siberia, west about to Verhoiansk Range, and mouth of Lena River. Its molars are more like those of *Eothenomys* than *Alticola*, to which genus it should be referred perhaps if, as Kuznetzov states, the molars are rootless in adult.

CLETHRIONOMYS [*contd.*]

1908. *Microtus* (*Eothenomys*) *inez* Thomas, Abstr. P.Z.S. 45; P.Z.S. *1909:* 976. Twelve miles north-west of Kolanchow, Shansi, China. Based on young specimens of *C. rufocanus shanseius* according to Hinton. A species of *Eothenomys* according to G. Allen. Hinton's view seems more likely to be correct.

1910. *Microtus* (*Eothenomys*) *nux* Thomas, Abstr. P.Z.S. 26; P.Z.S. 636. Shangchou, South-Eastern Shensi, 3,300 ft., China. Based on young specimens of *C. rufocanus shanseius* according to Hinton. A race of "*Eothenomys inez*" according to G. Allen, 1940.

1911. *Microtus* (*Caryomys*) *eva* Thomas, Abstr. P.Z.S. 4; P.Z.S. 175. South-east of Taochow, Kansu, 10,000 ft., China. Based on young specimens of *C. rufocanus shanseius* according to Hinton. A species of *Eothenomys* according to G. Allen, 1940.

1911. *Microtus* (*Caryomys*) *alcinous* Thomas, Abstr. P.Z.S. 50; P.Z.S. *1912:* 140. Weichoe, Siho River, Szechuan, 8,000–10,000 ft., China. Based on young specimens of *C. rufocanus shanseius* according to Hinton. A race of "*Eothenomys eva*" according to G. Allen, 1940.

1935. *Neoaschizomys sikotanensis* Tokuda, Mem. Coll. Sci. Kyoto, *10b:* 241. Sikotan Island, Kurile Islands, north of Japan. As described, surely a *Clethrionomys*; whether a species or race of *rufocanus* is not clear.

Besides these, there are three species (or groups of races) in the Palaearctic, the first-named of which is *C. rutilus*. The three species are hard to define when all forms are taken into consideration. *C. rufocanus* usually has a proportionately longer tooth-row than the allied species, but the differences do not amount to much, and the three species seem to grade into each other in other characters. Shortly before his death, Chaworth-Musters told me he thought *C. rutilus* might represent the original North American branch of the genus, which spread into Northern Eurasia; *rufocanus* might be the original Central Asiatic stock, spreading westwards into Europe; and *glareolus* the original European stock, spreading eastwards into Asia.

Clethrionomys rutilus Pallas, 1779 — Northern Redbacked Vole

Approximate distribution of species: Northern Norway and Sweden, Arctic Russia, south to Karelia, Kalinin, Gorki Provinces, Tartary, Bashkiria (Kuznetzov); practically throughout Siberia, to Kamtchatka and Pacific coast; Eastern Russian Turkestan (Tianshan), Chinese Turkestan, Mongolia, Manchuria, Hokkaido in Japan. Probably also in North America.

There are probably far too many standing named races in this species.

CLETHRIONOMYS RUTILUS RUTILUS Pallas, 1779

1779. *Mus rutilus* Pallas, Nov. Spec. Quad. Glir. Ord. 246. East of the Obi, Western Siberia.

1862. *Arvicola* (*Hypudaeus*) *russatus* Radde, Reise in den Sud. von Ost. Sibir, *1:* 186. Eastern Sayan Mountains, Siberia.

Range. Norway, Sweden, Russia, Western Siberia to Lake Baikal, Mongolia.

CLETHRIONOMYS RUTILUS AMURENSIS Schrenk, 1859

1859. *Arvicola (Hypudaeus) amurensis* Schrenk, Reise Amur-Land, 129. Mouth of River Amur, near Nicolaieff, Eastern Siberia.

1905. *Evotomys mikado* Thomas, Abstr. P.Z.S. 19; P.Z.S. 352. Aoyama, Hokkaido, Japan. Probably not distinguishable from *amurensis*.

Range includes Lower Amur, Shantar Islands, Sakhalin.

CLETHRIONOMYS RUTILUS JOCHELSONI J. Allen, 1903

1903. *Evotomys jochelsoni* J. Allen, Bull. Amer. Mus. N.H. *19:* 148. Verkhne Kolymsk, Kolyma River, North-Eastern Siberia. Range: to Kamtchatka.

CLETHRIONOMYS RUTILUS CENTRALIS Miller, 1906

1906. *Evotomys centralis* Miller, Ann. Mag. N.H. *17:* 373. Koksu Valley, 9,000 ft., Tianshan Mountains. Range: to Djarkent; Russian and Chinese Tianshan.

CLETHRIONOMYS RUTILUS MOLLESSONAE Kastschenko, 1910

1910. *Microtus mollessonae* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *15:* 294. Near Troitzsko-Savsk, Transbaikalia.

CLETHRIONOMYS RUTILUS BAIKALENSIS Ognev, 1924

1924. *Evotomys baikalensis* Ognev, Bull. Soc. Nat. Moscou, N.S. *31:* 73. Ushkanii Island, East Lake Baikal.

CLETHRIONOMYS RUTILUS LATICEPS Ognev, 1924

1924. *Evotomys laticeps* Ognev, Bull. Soc. Nat. Moscow, N.S. *31:* 75. Province of Irkutsk, Siberia. A doubtful form (Kuznetzov).

CLETHRIONOMYS RUTILUS PARVIDENS Ognev, 1924

1924. *Evotomys parvidens* Ognev, Bull. Soc. Nat. Moscow, N.S. *31:* 77. Province of Irkutsk, Siberia. A doubtful form (Kuznetzov).

CLETHRIONOMYS RUTILUS OTUS Turov, 1924

1924. *Evotomys otus* Turov, C.R. Acad. Sci. Russie, 110. North-eastern shore of Lake Baikal, Barguzin Range, Transbaikalia.

CLETHRIONOMYS RUTILUS JACUTENSIS Vinogradov, 1927

1927. *Evotomys rutilus jacutensis* Vinogradov, Mat. Comm. Etude Jakoute, No. 18, 1. Yakutsk, Siberia.

CLETHRIONOMYS RUTILUS ROSSICUS Dukelsky, 1928

1928. *Clethrionomys rutilus rossicus* Dukelsky, Trav. Stud. Nat. Reserves No. 10: 9. (*N.V.*) Type from near Miass. Range: Southern and Central Urals, Transvolga.

CLETHRIONOMYS RUTILUS VINOGRADOVI Naumov, 1933

1933. *Evotomys rutilus vinogradovi* Naumov, Abst. Zool. Inst. Moscow, *1:* 74. Type from Nizhnaya Tungushka. Range: basin of Middle and Lower Yenesei, Rivers Vilnui and Khatanga.

CLETHRIONOMYS RUTILUS VINOGRADOVI [*contd.*]

(?) 1933. *Clethrionomys rutilus tugarinovi* Vinogradov, Tab. Analyt. de la Faune de U.R.S.S. *10:* 60. *N.V. Nom. nud. ?*

CLETHRIONOMYS RUTILUS SALAIRICUS Egorin, 1936

1936. *Evotomys rutilus salairicus* Egorin, Animadv. Syst. Mus. Zool. Inst. Biol. Univ. Tomsk, *3:* 2. Salair mountain range, between Ob and Kuznetz Steppe, Siberia. Range: Altai and Cis-Altai districts.

CLETHRIONOMYS RUTILUS LENAENSIS Koljuschev, 1936

1936. *Evotomys rutilus lenaensis* Koljuschev, Trav. Inst. Sci. Biol. Tomsk, *2:* 292. Mouth of Lena River, near Bulun, Siberia.

CLETHRIONOMYS RUTILUS HINTONI Vinogradov, 1936

1936. *Clethrionomys rutilus hintoni* Vinogradov in Zolotarev, Mamm. of Iman River Basin (Ussuri), Moscow, 81. Type from Southern Ussuri region, East Siberia.

CLETHRIONOMYS RUTILUS URALENSIS Koljusch, 1936

1936. *Clethrionomys rutilus uralensis* Koljusch, Trav. Inst. Sci. Biol. Tomsk, *2:* 290. Northern Urals.

CLETHRIONOMYS RUTILUS NARYMENSIS Egorin, 1939

1939. *Evotomys rutilus narymensis* Egorin, Trav. Inst. Sci. Biol. Tomsk, *6:* 125. Kelbvat River, left-hand tributary of Wasjugan, Kargasok region of Narym district, Western Siberia.

CLETHRIONOMYS RUTILUS LATEGRISEUS Argyropulo & Afanasiev, 1939

1939. *Clethrionomys rutilus lategriseus* Argyropulo & Afanasiev, Bull. Kazakstan Branch, Acad. Sci. U.S.S.R., 13. (*N.V.*) Kazakstan Highlands.

Incertae sedis

Clethrionomys rutilus dorogostaiskii Vinogradov, 1933, Tab. Analyt. de la Faune de U.R.S.S. *10:* 60, *nom. nud.* Northern parts Amur district, upper reaches River Seia.

Clethrionomys glareolus Schreber, 1780 Common Redbacked Vole; Bank Vole

Approximate distribution of species: Britain, France, Belgium, Switzerland, Italy, Norway, Sweden, Holland, Denmark, Germany, Poland, Finland, southwards to Yugoslavia, Rumania; Russia from Arctic southwards to Ukraine and Southern Urals, Semirechyia, Sayan Mountains, Altai Mountains, Salair Range and Narym region in Western Siberia, Western Transcaucasia, Asia Minor. Perhaps represented in North America.

CLETHRIONOMYS GLAREOLUS GLAREOLUS Schreber, 1780

1780. *Mus glareolus* Schreber, Säugeth. *4:* 680. Island of Lolland, Denmark.
(?) 1792. *Mus rutilus minor* Kerr, Anim. Kingd. 237. Kazan, Russia.
1828. *Arvicola fulvus* Millet, Faune de Maine-et-Loire, *1:* 40. Angers, Maine-et-Loire, France.
1831. *Hypudacus* (sic) *hercynicus* Mehlis, Okens Isis, 876. Harz Mountains, Germany.
1834. *Lemmus rubidus* Baillon, Mem. Roy. Soc. Emul. d'Abbeville, *1833*, 7: 54. Abbeville, Somme, France.
1834. *Lemmus pratensis* Baillon, Mem. Soc. Emul. Abbeville, *1833*, *7:* 53. Abbeville, Somme, France.
1836. *Arvicola rufescens* de Sélys Longchamps, Essai Monogr. sur Campagn. Environs Liége, 13. Longchamps-sur-Ger, Belgium.
1912. "1803. *Lemmus arvalis* Geoffroy, Catal. Mammif. du Mus. Nat. d'Hist. Nat., p. 185 (Meudon, Seine, France)" Miller (in synonymy), Cat. Mamm. Western Europe, 632. Not valid, as according to Sherborn this name was never published.

Range: Denmark, Holland, Belgium, France, Germany, Bohemia, Poland.

CLETHRIONOMYS GLAREOLUS NAGERI Schinz, 1845

1845. *Hypudaeus nageri* Schinz. Synops. Mamm. *2:* 237. Oberalpsee, near Andermatt, Uri, Switzerland.
1862. *Myodes bicolor* Fatio, Rev. Mag. Zool. *14:* 257. Genthal, Berne, Switzerland.
Other possible synonyms include:
1923. *Evotomys glareolus jurassicus* Burg, Zool. Palaearctica, Dresden, *1*, 2: 65. Born, Switzerland. (*N.V.*)
1923. *Evotomys glareolus intermedius* Burg, *loc. cit.* 66. Bergell, 2,700 m., Switzerland. (*N.V.*)

Range: Mountains of Switzerland and Northern Italy. This is treated as a species with several of the named forms below as races by Hinton, but as a race by Miller, 1912; there is some intergradation of characters between the *glareolus* and *nageri* sections of races, and the latter are most likely only high mountain representatives of the former.

CLETHRIONOMYS GLAREOLUS NORVEGICUS Miller, 1900

1900. *Evotomys norvegicus* Miller, Proc. Washington Acad. Sci. *2:* 93. Bergen, Norway.
Range: Western Norway, north to Nordland.

CLETHRIONOMYS GLAREOLUS VASCONIAE Miller, 1900

1900. *Evotomys vasconiae* Miller, Proc. Washington Acad. Sci. *2:* 96. Montréjeau, Haute-Garonne, France. Range: Pyrenean France.

CLETHRIONOMYS GLAREOLUS HELVETICUS Miller, 1900

1900. *Evotomys hercynicus helveticus* Miller, Proc. Washington Acad Sci. *2:* 98. Montauban, Haute-Savoie, France, 900 m. (near Geneva, Switzerland). Range: France, Switzerland (in part). Possibly a synonym of *vasconiae*.

CLETHRIONOMYS GLAREOLUS SUECICUS Miller, 1900

1900. *Evotomys hercynicus suecicus* Miller, Proc. Washington Acad. Sci. *2:* 101. Upsala, Sweden. Range: to Finland and South-Eastern Norway.

CLETHRIONOMYS GLAREOLUS BRITANNICUS Miller, 1900

1900. *Evotomys hercynicus britannicus* Miller, Proc. Washington Acad. Sci. *2:* 103. Basingstoke, Hampshire, England.

1832. *Arvicola riparia* Yarrell, P.Z.S. 109. Not of Ord, 1825.

1837. *Arvicola pratensis* Bell, H. Brit. Quadr. 330. Not of Baillon, 1834.

Range: England, Scotland.

CLETHRIONOMYS GLAREOLUS SKOMERENSIS Barrett-Hamilton, 1903

1903. *Evotomys skomerensis* Barrett-Hamilton, Proc. R. Irish Acad. 316. Skomer Island, coast of Pembrokeshire, Wales.

CLETHRIONOMYS GLAREOLUS PONTICUS Thomas, 1906

1906. *Evotomys ponticus* Thomas, Ann. Mag. N.H. *17:* 417. Sumela, south of Trebizond, Northern Asia Minor. Range: to Georgia, Transcaucasia.

CLETHRIONOMYS GLAREOLUS HALLUCALIS Thomas, 1906

1906. *Evotomys nageri hallucalis* Thomas, Ann. Mag. N.H. *18:* 221. Santa Euphemia d'Aspromonte, Calabria, Southern Italy.

CLETHRIONOMYS GLAREOLUS FRATER Thomas, 1908

1908. *Evotomys frater* Thomas, Ann. Mag. N.H. *1:* 448. Tianshan, probably near Przewalsk, Russian Central Asia. Range: Russian Tianshan, west to Naruim and eastern part Kirghiz Range (Kuznetzov).

CLETHRIONOMYS GLAREOLUS ISTERICUS Miller, 1909

1909. *Evotomys glareolus istericus* Miller, Ann. Mag. N.H. *3:* 419. Bustenari, Prahova, in Carpathians, north-west of Bucharest, 480 m., Rumania. Range: to Germany (Bavaria), Hungary, Yugoslavia, Ukraine, central parts European Russia.

CLETHRIONOMYS GLAREOLUS SAIANICUS Thomas, 1911

1911. *Evotomys glareolus saianicus* Thomas, Ann. Mag. N.H. *8:* 759. Sayan Mountains, 100 miles west of Lake Baikal, 1,600 ft., Siberia.

CLETHRIONOMYS (?) GLAREOLUS ALSTONI Barrett-Hamilton & Hinton, 1913

1913. *Evotomys alstoni* Barrett-Hamilton & Hinton, Abstr. P.Z.S. 18; P.Z.S. 827. Tobermory, Island of Mull, Inner Hebrides.

CLETHRIONOMYS GLAREOLUS REINWALDTI Hinton, 1921

1921. *Evotomys glareolus reinwaldti* Hinton, Ann. Mag. N.H. *8:* 128. Hapsal, Estonia. Range: across Northern Russia to the Urals.

Clethrionomys glareolus sobrus Montagu, 1923

1923. *Evotomys glareolus sobrus* Montagu, P.Z.S. 867. Rescetari, Nova Gradisca, Croatia, Yugoslavia.

Clethrionomys glareolus gorka Montagu, 1923

1923. *Evotomys gorka* Montagu, P.Z.S. 867. Zalesina, the Gorski Kotar, Croatia, Yugoslavia.

Clethrionomys glareolus italicus Dal Piaz, 1924

1924. *Evotomys glareolus italicus* Dal Piaz, Studi Trentini, *5*, 4: 3. Brennero, Alto Adige, 1,400 m., Northern Italy.

Clethrionomys glareolus vesanus Hinton, 1926

1926. *Evotomys nageri vesanus* Hinton, Monogr Voles & Lemmings, *1:* 228. Mittelberg, near Kaufbeuern, Bavaria, 1,200–1,300 m., Germany.

Clethrionomys glareolus ruttneri Wettstein, 1926

1926. *Evotomys glareolus ruttneri* Wettstein, Anz. Akad. Wiss. Wien, *63*, 13: 19. Seetal, near Lunz, Lower Austria.

Clethrionomys glareolus ognevi Serebrennikov, 1927

1927. *Evotomys glareolus ognevi* Serebrennikov, Ann. Mus. Zool. Leningrad, *27:* 342. Buzuluk Division, Samara, Russia. Range: Southern Transvolga district, Eastern Russia.

Clethrionomys glareolus wasjuganensis Egorin, 1939

1939. *Evotomys glareolus wasjuganensis* Egorin, Trav. Inst. Sci. Biol. Tomsk, *6:* 134. Neighbourhood of Katalgi, right bank River Vasyugan, Western Siberia. (Not listed as a valid form by Kuznetzov, 1944.)

Clethrionomys glareolus insulaebellae Heim de Balsac, 1940

1940. *Clethrionomys glareolus insulaebellae* Heim de Balsac, C.R. Acad. Sci. Paris, *211:* 213. Belle Ile, Western France.

Clethrionomys glareolus sibiricus Egorin, 1936, Animad. Syst. Mus. Zool. Inst. Biol. Univ. Tomsk, No. 4 (Salair Range, 54° N., 86° E., Siberia) (*N.V.*) is preoccupied by *sibiricus* Poliakoff, 1881, and has been renamed *Clethrionomys glareolus tomensis* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 710.

Clethrionomys rufocanus Sundevall, 1846 Large-toothed Redbacked Vole

Approximate distribution of species: Norway and Sweden; also as here understood Channel Islands, and Raasay Island, Hebrides; Arctic Russia, Altai, and adjacent areas, Trans-Yenesei Siberia eastwards to Kamtchatka and the whole of the Far East. Japan, Manchuria, Mongolia, China from states of Chihli, Shansi, and probably Kansu and Szechuan.

CLETHRIONOMYS RUFOCANUS RUFOCANUS Sundevall, 1846

1846. *Hypudaeus rufocanus* Sundevall, K. Svenska Vetensk. Akad. Handl. *3:* 122. Lappmark, Sweden.

1881. *Arvicola rufocanus* var. *sibirica* Poliakov, Mem. Imp. Acad. Sci. St. Petersb. *39:* app. 56. (*N.V.*)

1881. *Arvicola kamtschaticus* Poliakov, Mem. Imp. Ac. Sci. St. Petersb. *39:* page unknown (*N.V.*), see Lataste, 1884, Ann. Mus. Civ. St. Nat. Genova, *20:* 284. Kamtchatka.

1903. *Evotomys* (*Craseomys*) *latastei* J. Allen, Bull. Amer. Mus. N.H. *19:* 145. Renaming of *kamtschaticus*. Northern Kamtchatka.

1932. *Clethrionomys rufocanus kurilensis* Tokuda, Trans. N.H. Soc. Sapporo, *12:* 206 Paramushir Island, Kurile Islands, Japan.

Range: Norway, Sweden, Northern Russia, Urals, Siberia to Kamtchatka according to Hinton; Manchuria, Mongolia; Kuriles.

CLETHRIONOMYS RUFOCANUS WOSNESSENSKII Poliakov, 1881

1881. *Arvicola wosnessenskii* Poliakov, Mem. Imp. Acad. Sci. St. Petersb. *39:* 56. Kamtchatka. Probably a synonym of the last. (*N.V.*) Russian authors say this form belongs here. Hinton placed it in the *rutilus* group.

CLETHRIONOMYS RUFOCANUS SMITHI Thomas, 1905

1905. *Evotomys* (*Phaulomys*) *smithii* Thomas, Ann. Mag. N.H. *15:* 493. Kobe, Hondo, Japan.

1905. *Evotomys bedfordiae* Thomas, Abstr. P.Z.S. 18; P.Z.S. 353. Shinshinotsu, near Sapporo, Hokkaido, Japan.

1905. *Evotomys andersoni* Thomas, Abstr. P.Z.S. 18; P.Z.S. 354. Tsunagi, near Morioka, Iwate Ken, Northern Hondo, Japan.

1909. *Craseomys niigitae* Anderson, Ann. Mag. N.H. *4:* 317. Akakura, Niigata Prefecture, Hondo, Japan.

1928. *Evotomys* (*Craseomys*) *arsenjevi* Dukelsky, Zool. Anz. *77:* 40. Ussuri region, Eastern Siberia. A synonym of *bedfordiae* (= *smithi*), Kuznetzov.

Range: Sakhalin, Amur-Ussuri region of Eastern Siberia, Hokkaido, Hondo, Kiushiu, Shikoku in Japan.

CLETHRIONOMYS RUFOCANUS REGULUS Thomas, 1907

1907. *Craseomys regulus* Thomas, P.Z.S. *1906:* 863. Mingyong, 110 miles south-east of Seoul, 1,100–1,300 ft., Korea.

CLETHRIONOMYS RUFOCANUS SHANSEIUS Thomas, 1908

1908. *Craseomys shanseius* Thomas, P.Z.S. 643. One hundred miles north-west of Taiyuenfu, Shansi, 8,000 ft., China. Range: to Chihli.

(?) 1908. *Microtus* (*Eothenomys*) *inez* Thomas, Abstr. P.Z.S. 45. Twelve miles north-west of Kolanchow, Shansi, 7,000 ft., China.

(?) 1910. *Microtus* (*Eothenomys*) *nux* Thomas, Abstr. P.Z.S. 26. Shangchow, South-Eastern Shensi, 3,300 ft., China.

(?) 1911. *Microtus* (*Caryomys*) *eva* Thomas, Abstr. P.Z.S. 4. South-east of Taochow, Kansu, 10,000 ft., China.

(?) 1911. *Microtus* (*Caryomys*) *alcinous* Thomas, Abstr. P.Z.S. 50. Weichoe, Siho River, Western Szechuan, 8,000–10,000 ft., China.
(?) 1912. *Craseomys aquilus* G. Allen, Mem. Mus. Comp. Zool. Harvard, *40:* 216. Showlungtan, 7,000–9,000 ft., Hupeh, China.
(?) 1939. *Microtus inez jeholicus* Kuroda, Bull. Biogeogr. Soc. Japan, Tokyo, *9*, 1: 17. Mt. Mulei, Nekka Province, Jehol, North-Eastern China. (*N.V.*)

Clethrionomys rufocanus caesarius Miller, 1908

1908. *Evotomys caesarius* Miller, Ann. Mag. N.H. *1:* 194. St. Helier, Jersey, Channel Islands.

Clethrionomys (?) rufocanus erica Barrett-Hamilton & Hinton, 1913

1913. *Evotomys erica* Barrett-Hamilton & Hinton, Ann. Mag. N.H. *12:* 361. Raasay Island, Inner Hebrides.

Clethrionomys rufocanus kolymensis Ognev, 1922

1922. *Evotomys kolymensis* Ognev, Biol. Isvestia, *1:* 108. Beresovska, near Sredny-Kolymsk, North-Eastern Siberia. Range: Rivers Yana, Kolyma, Anadyr, North-Eastern Siberia.

Clethrionomys rufocanus irkutensis Ognev, 1924

1924. *Evotomys* (*Craseomys*) *irkutensis* Ognev, Bull. Soc. Nat. Moscou, N.S. *31:* 69. Irkutsk Province (Khamar Daban Range), Siberia. A synonym of the typical race according to Hinton, but retained by Kuznetzov.
1924. *Craseomys rufocanus bargusinensis* Turov, C.R. Acad. Sci. Leningrad, 110. North-Eastern shore Lake Baikal.

Range: Baikal area, Transbaikalia.

Clethrionomys rufocanus okiensis Tokuda, 1933

1933. *Clethrionomys rufocanus okiensis* Tokuda, Annot. Zool. Jap. *13:* 578. Dogo, Oki Islands, Japan.

Also named:

Clethrionomys yesomontanus Kishida, 1931, Lansania, *3*, 27: 107. Kurodake Daisetsu Mountains, Central Hokkaido, Japan. (*N.V.* Reference from Kuroda.)

Genus **EOTHENOMYS** Miller, 1896

1896. *Eothenomys* Miller, North Amer. Fauna, No. 12, 45. *Arvicola melanogaster* Milne-Edwards.
1896. *Anteliomys* Miller, North Amer. Fauna, 12, 47. *Microtus chinensis* Thomas.

Certain Chinese forms which may be based on young specimens of *Clethrionomys rufocanus* have been included above in the genus *Clethrionomys*, but G. Allen refers these to *Eothenomys* (subgenus *Caryomys*). *Aschizomys* Miller, 1896, has also been listed above in *Clethrionomys*, but if the cheekteeth are rootless in adults it may have to be included in *Eothenomys*.

On account of intermediate species, it seems that *Anteliomys* is not distinguishable from *Eothenomys*. Hinton (1926, 284) and G. Allen (1940, 805) give keys to the species of *Eothenomys*.

This genus is not very widely separated from *Alticola*, which antedates it.

5 species: *Eothenomys chinensis*, page 669
Eothenomys custos, page 670
Eothenomys melanogaster, page 668
Eothenomys olitor, page 669
Eothenomys proditor, page 669

Eothenomys melanogaster Milne-Edwards, 1872 Père David's Vole

Approximate distribution of species: China, from Southern Kansu, Szechuan, Yunnan, Hupeh, eastwards to Fukien, Chekiang; Formosa; Northern Assam, Northern Burma, Northern Indo-China.

G. Allen, for no apparent reason except a very small geographical overlap between two of the supposed races, separates this species into three in his work on the mammals of China and Mongolia. His own form *aurora*, which he makes a race of *miletus*, antedates *miletus*. Some of the races require redefinition, as extra material collected by Americans is said to make the dental characters of some of the supposed races inconstant.

Eothenomys melanogaster melanogaster Milne-Edwards, 1872

1872. *Arvicola melanogaster* Milne-Edwards in David, Nouv. Arch. Mus. H.N. Paris, *7*, Bull.: 93 (footnote). Moupin, Szechuan, China.

1912. *Microtus* (*Eothenomys*) *mucronatus* G. Allen, Mem. Mus. Comp. Zool. Harvard, Coll. *40:* 214. Tachiao, Western Szechuan.

Range: Szechuan, Kansu, China.

Eothenomys melanogaster colurnus Thomas, 1911

1911. *Microtus* (*Eothenomys*) *melanogaster colurnus* Thomas, Ann. Mag. N.H. *7:* 209. Kuatun, Fukien, South-Eastern China. Range: to Chekiang.

1922. *Microtus* (*Eothenomys*) *bonzo* Cabrera, Bol. Soc. Esp. H.N. *22:* 168. Foochow, Fukien, China.

Eothenomys melanogaster eleusis Thomas, 1911

1911. *Microtus* (*Eothenomys*) *melanogaster eleusis* Thomas, Abstr. P.Z.S. 50; P.Z.S. 139. East of Chaotungfu, Yunnan, China.

1923. *Eothenomys melanogaster confinii* Hinton, Ann. Mag. N.H. *11:* 151. Kiuchiang-Salween divide, 28° N., Yunnan, 11,000 ft., China.

Range: into Indo-China (Tonkin).

Eothenomys melanogaster aurora G. Allen, 1912

1912. *Microtus* (*Eothenomys*) *aurora* G. Allen, Mem. Mus. Comp. Zool. Harvard Coll. *40:* 211. Changyanghsien, Hupeh, China.

EOTHENOMYS MELANOGASTER MILETUS Thomas, 1914

1914. *Microtus (Eothenomys) melanogaster miletus* Thomas, Ann. Mag. N.H. *14:* 474. Ten miles west of Yangpi, Western Yunnan, China.

1923. *Eothenomys fidelis* Hinton, Ann. Mag. N.H. *11:* 150. West flank Likiang Range, Yunnan, 13,000–14,000 ft., 27°30′ N., China.

EOTHENOMYS MELANOGASTER CACHINUS Thomas, 1921

1921. *Microtus (Eothenomys) cachinus* Thomas, J. Bombay N.H. Soc. *27:* 504. Mt. Imaw Bum, Kachin Province, 9,000 ft., Northern Burma.

EOTHENOMYS MELANOGASTER LIBONOTUS Hinton, 1923

1923. *Eothenomys melanogaster libonotus* Hinton, Ann. Mag. N.H. *11:* 151. Dreyi, Mishmi Hills, 5,140 ft., Northern Assam. Range: to Northern Burma, in part.

EOTHENOMYS MELANOGASTER KANOI Tokuda, 1937

1937. *Eothenomys kanoi* Tokuda, Bot. & Zool. *5:* 1118. Formosa.

Eothenomys olitor Thomas, 1911

Approximate distribution of species: Yunnan, China.

EOTHENOMYS OLITOR Thomas, 1911

1911. *Microtus (Eothenomys) olitor* Thomas, Abstr. P.Z.S. 50; P.Z.S. *1912:* 139. Chaotungfu, Yunnan, China.

Eothenomys proditor Hinton, 1923

Approximate distribution of species: Szechuan and Yunnan, China.

EOTHENOMYS PRODITOR Hinton, 1923

1923. *Eothenomys proditor* Hinton, Ann. Mag. N.H. *11:* 152. Likiang Range, Yunnan, 27°30′ N., 13,000 ft., China. Range: as above.

Eothenomys chinensis Thomas, 1891 Pratt's Vole

Approximate distribution of species: Szechuan and Yunnan, China.

EOTHENOMYS CHINENSIS CHINENSIS Thomas, 1891

1891. *Microtus chinensis* Thomas, Ann. Mag. N.H. *8:* 117. Kiatingfu, Szechuan, China.

EOTHENOMYS CHINENSIS WARDI Thomas, 1912

1912. *Microtus (Anteliomys) wardi* Thomas, Ann. Mag. N.H. *9:* 516.Chamutong, west of Atunsi, North-Western Yunnan, 13,000 ft., China.

EOTHENOMYS CHINENSIS TARQUINIUS Thomas, 1912

1912. *Microtus (Anteliomys) chinensis tarquinius* Thomas, Ann. Mag. N.H. *9:* 517. Twenty-three miles south-east of Tatsienlu, Szechuan, China.

Eothenomys custos Thomas, 1912

Approximate distribution of species: Szechuan and Yunnan, China.

Eothenomys custos custos Thomas, 1912

1912. *Microtus (Anteliomys) custos* Thomas, Ann. Mag. N.H. *9:* 517. Atunsi, North-Western Yunnan, 11,500–12,500 ft., China.

Eothenomys custos rubellus G. Allen, 1924

1924. *Microtus (Anteliomys) custos rubellus* G. Allen, Amer. Mus. Nov. 133, 5. Ssu-shan, Likiang Range, Yunnan, 13,000 ft., China.

1926. *Anteliomys custos rubelius* Hinton, Monogr. Voles & Lemmings, *1:* 299.

Eothenomys custos hintoni Osgood, 1932

1932. *Eothenomys (Anteliomys) custos hintoni* Osgood, Field Mus. Publ. Zool. *18:* 321. Wushi, south-west of Tatsienlu, 12,000 ft., Szechuan, China.

Genus **ALTICOLA** Blanford, 1881

1881. *Alticola* Blanford, J. Asiat. Soc. Bengal, *50*, 2: 96. *Arvicola stoliczkanus* Blanford.

1901. *Platycranius* Kastschenko, Ann. Mus. Zool. Acad. Imp. Sci. St. Petersb. *6:* 199. *Microtus strelzowi* Kastschenko. Valid as a subgenus.

4 species: *Alticola macrotis*, page 673
Alticola roylei, page 670
Alticola stoliczkanus, page 673
Alticola strelzowi, page 673

I doubt if there are really more than four valid species in this genus. Russian authors also refer here *Aschizomys* Miller, as a subgenus. See remarks above under genera *Clethrionomys* and *Eothenomys*.

Subgenus *ALTICOLA* Blanford, 1881

Alticola roylei Gray, 1842 Royle's High Mountain Vole

Approximate distribution of species: Southern and Eastern Russian Turkestan (Tianshan, Pamir, Hissar Ranges); an allied form, which Russian authors list as a species, inhabits the Siberian Altai. Chinese Turkestan, Mongolia. Kashmir, Northern Punjab, Kumaon, North-West Frontier. Afghanistan.

Alticola roylei roylei Gray, 1842

1842. *Arvicola roylei* Gray, Ann. Mag. N.H. *10:* 265. Kumaon, North-Western India (Wroughton, Hinton).

Alticola roylei argentata Severtzov, 1879

1879. *(Arvicola?) argentata* Severtzov, Sapiski Turkest. Otdela Obsochvestva Lubitelei Estestvosnania, Antrop. Ethnograp. *1:* 63–64. (*N.V.*) Alichur, Pamir Mountains.

1909. *Microtus (Alticola) argurus* Thomas, Ann. Mag. N.H. *3:* 264. Hissar Mountains, 9,500 ft., 100 miles east of Samarkand, Russian Turkestan.

Alticola roylei blanfordi Scully, 1880

1880. *Arvicola blanfordi* Scully, Ann. Mag. N.H. *6:* 399. Gilgit, between 9,000 and 10,000 ft., Kashmir.

(?) 1926. *Alticola blanfordi lahulius* Hinton, Monogr. Voles & Lemmings, *1:* 309. Kyelang, Lahul, 10,380 ft., Northern India.

Alticola roylei montosa True, 1894

1894. *Arvicola montosa* True, Proc. U.S. Nat. Mus. *17:* 11. Central Kashmir, 11,000 ft.

1905. *Microtus imitator* Bonhote, Ann. Mag. N.H. *15:* 197. Tullian, 11,000 ft., Kashmir.

Range: Kashmir (part), North-West Frontier, Afghanistan (specimen in B.M.).

Alticola roylei albicauda True, 1894

1894. *Arvicola albicauda* True, Proc. U.S. Nat. Mus. *17:* 12. Braldu Valley, Baltistan, about 12,000 ft., Kashmir.

Alticola roylei worthingtoni Miller, 1906

1906. *Alticola worthingtoni* Miller, Ann. Mag. N.H. *17:* 372. Koksu, Tianshan Mountains, 9,000 ft., Central Asia.

(?) 1923. *Alticola gracilis* Kashkarov, Trans. Sci. Soc. Turkestan, 203. Besh-tash Ravine, Talassk Ala-tau, Tianshan Mountains.

Range: Tianshan, Zungaria.

Alticola roylei phasma Miller, 1912

1912. *Alticola phasma* Miller, Proc. Biol. Soc. Washington, *25:* 59. East side of Karakorum Mountains, 9,000-10,000 ft., Chinese Turkestan.

Alticola roylei glacialis Miller, 1913

1913. *Alticola glacialis* Miller, Proc. Biol. Soc. Washington, *26:* 197. Chogo Lungma Glacier, Baltistan, 11,000 ft., Kashmir.

Alticola roylei subluteus Thomas, 1914

1914. *Alticola worthingtoni subluteus* Thomas, Ann. Mag. N.H. *13:* 570. Djarkent, Semirechyia, Russian Central Asia.

Alticola roylei longicauda Kashkarov, 1923

1923. *Alticola longicauda* Kashkarov, Trans. Soc. Sci. Turkestan, 203. Kayand Ravine, Alexandrovsk Range, Russian Tianshan Mountains.

(?) 1923. *Alticola villosa* Kashkarov, *loc. cit.* Sary-Bulak Pass, Alexandrovsk Range, Russian Tianshan Mountains.

Range: Tianshan, excluding Trans-Ili and Dzhungar Alatau.

Alticola roylei semicanus G. Allen, 1924

1924. *Microtus* (*Alticola*) *worthingtoni semicanus* G. Allen, Amer. Mus. Nov. 133, 6. Sain Noin Khan, Mongolia.

ALTICOLA ROYLEI CAUTUS Hinton, 1926

1926. *Alticola roylei cautus* Hinton, Monogr. Voles & Lemmings, *1:* 313. Rahla, Kulu Valley, Lahul, 8,500–9,200 ft., Northern India.

ALTICOLA (?) ROYLEI ALTAICA Vinogradov, 1933

1933. *Alticola altaica* Vinogradov, Trav. L'Inst. Zool. Acad. Sci. 63 (*M.V.*) Ivanorskie Beli, near Riddersk Village, Ust-Kamenogorsk subdistrict, Siberian Altai. Not represented in London. Kuznetzov lists this as a valid species, based on a dental detail of the third upper molar, and length of tail (usually shorter than his *argentata* (= *roylei*, in part, as here understood)).

(?) 1933. *Alticola vinogradovi* Rasorenova, Bull. Soc. Nat. Moscou, Sect. Biol. *42:* 79. Siberian Altai. Not listed by Kuznetzov as valid; this author only lists one form of *Alticola sensu stricto* (*altaica*), from the Altai.

ALTICOLA ROYLEI ALLENI Argyropulo, 1933

1933. *Alticola* (*Alticola*) *semicanus alleni* Argyropulo, Z. Säuget. *8:* 180. Kentai Mountains, 30 km. east of Urga (Ulan-Bator-Choto), Mongolia. Not a synonym of *macrotis*, which G. Allen made it; tail too long (from Allen's measurements, 29–31, hindfoot 20.2–21.6; Kuznetzov states *macrotis* has the tail about same length as hindfoot, not over 20 mm.).

ALTICOLA ROYLEI ACMAEUS Schwarz, 1939

1939. *Alticola acmaeus* Schwarz, P.Z.S. *108B:* 665. Mbrobuk, Phyang Nullah, northwest of Leh, 14,000 ft., Ladak, Kashmir. Very close to *glacialis*.

ALTICOLA ROYLEI ROSANOVI Ognev, 1940

1940. *Alticola argentata rosanovi* Ognev, Mamm. Central Tian-Shan, Mater. Poznan Faun. Flor. U.S.S.R. Moscow, Ser. Zool. *3:* 68. Type from Bor-Dabui in Alaiskii Valley, Russian Central Asia.

ALTICOLA ROYLEI SHNITNIKOVI Ognev, 1940

1940. *Alticola argentata shnitnikovi* Ognev Mamm. Central Tian-Shan, Mater. Poznan Faun. Flor. U.S.S.R. Moscow, Ser. Zool. *3:* 63. Type from Alma-Ata Reserve. Range: Trans-Ili Alatau, Russian Central Asia.

Incertae sedis

1889. *Arvicola severtzovi* Tichomirov & Kortchagin, Bull. Soc. Amis. Nat. Moscow, *56*, 4: 28. Upper Masat, foothills of Tianshan. (Queried as *Alticola* in notes left by J. L. Chaworth-Musters.)

1903. *Microtus kaznakovi* Satunin, Ann. Mus. St. Pétersb. *7:* 581. This was compared with *Microtus* (= *Alticola*) *strachevi* in the original description, and said to have come from Chi-tschju River, upper Blue River (Chinese Central Asia?); Chaworth-Musters thought it was *Alticola*, but Kuznetzov (1944) lists it in *Pitymys* as a race of *P. majori*, which it antedates, and says it comes from Talysh (Transcaucasia).

Alticola macrotis Radde, 1862

Approximate distribution of species: Eastern Sayan Mountains and mountains east of Lake Baikal, Siberia.

This, the second name in the genus is, according to Kuznetzov, a species with a very short tail (about equal to hindfoot); in this it is reminiscent of *A. stoliczkanus*; but its third upper molar is quite different from that of *stoliczkanus* as figured by Kuznetzov in Bobrinskii, 341. I therefore list them both as valid species. As noted above, the form which G. Allen made a synonym of it is probably a race of *A. roylei*. It has a considerably longer tail, as is usual in that species.

Alticola macrotis Radde, 1862

1862. *Arvicola macrotis* Radde, Reise in den Sud. Ost. Sibirien, *1:* 196. Eastern Sayan Mountains, Siberia.

Alticola stoliczkanus Blanford, 1875 Stoliczka's High Mountain Vole

Approximate distribution of species: Kashmir, to Mt. Everest, Tibet, and possibly Kansu, China.

Alticola stoliczkanus stoliczkanus Blanford, 1875

1875. *Arvicola stoliczkanus* Blanford, J. Asiat. Soc. Bengal, *44,* 2: 107. Kuenlun Mountains, Northern Ladak.

Alticola stoliczkanus stracheyi Thomas, 1880

1880. *Arvicola stracheyi* Thomas, Ann. Mag. N.H. *6:* 332. Ladak (see Hinton, 1926, 322. Originally cited as Kumaon).

1899. *Microtus cricetulus* Miller, Proc. Acad. Nat. Sci. Philadelphia, 294. Tso-Kyun, 16,000 ft., Ladak.

Alticola stoliczkanus acrophilus Miller, 1899

1899. *Microtus acrophilus* Miller, Proc. Acad. Nat. Sci. Philadelphia, 296. Ladak side of Karakorum Pass, 17,000 ft.

Alticola stoliczkanus lama Barrett-Hamilton, 1900

1900. *Microtus* (*Alticola*) *lama* Barrett-Hamilton, P.Z.S. 196. Twenty-five miles southeast of Lake Arucho, 16,000 ft., Western Tibet. A doubtful form.

Alticola (?) stoliczkanus nanschanicus Satunin, 1903

1903. *Microtus nanschanicus* Satunin, Ann. Mus. St. Pétersb. *7:* 575. Scharogeldschin, Nanshan, North-Western Kansu, China. A doubtful form, based apparently on a single specimen; from G. Allen's notes the tail length suggests *stoliczkanus*.

Subgenus *PLATYCRANIUS* Kastschenko, 1901

Alticola strelzowi Kastschenko, 1900 Flat-skulled Vole

Approximate distribution of species: Siberian Altai Mountains, Sayan Mountains, Tarbagatai Mountains, and Eastern Kazakstan. South apparently to Mongolian Altai.

ALTICOLA STRELZOWI STRELZOWI Kastschenko, 1900

1900. *Microtus strelzowi* Kastschenko, Bull. Imp. Tomsk. Univ. *16:* 50. Near Lake Teniga, Altai Mountains.

Possibly *Mus alliarius* Pallas, 1779, Nov. Spec. Quad. Glir. Ord. 252 (neighbourhood of Jenisseisk, Jenisseisk Province, Siberia) should replace this name. Range: Altai, except in south-east and south.

ALTICOLA STRELZOWI DESERTORUM Kastschenko, 1901

1901. *Microtus strelzowi desertorum* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *6:* 206. Neighbourhood of Jenisseisk (Karkaralinsk subdistrict, Mt. Karakuus), Siberia (renaming of *Arvicola alliaria* Eversmann, 1840). Range: South-Eastern Altai, Western Tarbagatai, Eastern Kazakstan.

ALTICOLA STRELZOWI DEPRESSUS Ognev, 1944

1944. *Platycranius strelzowi depressus* Ognev, C.R. Acad. Sci. Moscow, N.S. *43*, 4: 178. Chegan Burgazy, Chuiskaya Steppe, Siberian Altai.

Genus **HYPERACRIUS** Miller, 1896

1896. *Hyperacrius* Miller, North Amer. Fauna. 12, 54. *Arvicola fertilis* True.

2 species: *Hyperacrius fertilis*, page 674
Hyperacrius wynnei, page 674

Hyperacrius wynnei Blanford, 1881 — Murree Vole

Approximate distribution of species: Punjab, Kashmir.

HYPERACRIUS WYNNEI Blanford, 1881

1881. *Arvicola wynnei* Blanford, J. Asiat. Soc. Bengal, *1880*, *49*, 2: 244. Murree, Punjab. Range: as above.

Hyperacrius fertilis True, 1894 — True's Vole

Approximate distribution of species: Kashmir.
It differs from *H. wynnei* in its smaller skull and teeth.

HYPERACRIUS FERTILIS FERTILIS True, 1894

1894. *Arvicola fertilis* True, Proc. U.S. Nat. Mus. *17:* 10. Pir Panjal Mountains, 8,500 ft., Kashmir.

HYPERACRIUS FERTILIS BRACHELIX Miller, 1899

1899. *Microtus (Hyperacrius) brachelix* Miller, Proc. Acad. Nat. Sci. Philadelphia, 290. Nagmarg, 9,000 ft., Kashmir.

Not specifically identifiable:

1897. *Microtus (Hyperacrius) aitchisoni* Miller, Proc. Biol. Soc. Washington, *11:* 141. Gulmerg, 9,000 ft., Kashmir. Known by one specimen, the skull of which is in fragments.

Genus **DOLOMYS** Nehring, 1898

1898. *Dolomys* Nehring, Zool. Anz. *21:* 13. *Dolomys milleri* Nehring, a fossil species from Southern Hungary.

1 species: *Dolomys bogdanovi*, page 675

Dolomys bogdanovi Martino, 1922 — Martino's Snow Vole

Approximate distribution of species: Yugoslavia.

Dolomys bogdanovi bogdanovi Martino, 1922

1922. *Microtus (Chionomys) bogdanovi* Martino, Ann. Mag. N.H. *9:* 413. Cetinje, Montenegro, 680 m., Yugoslavia.

Dolomys bogdanovi marakovici Bolkay, 1924

1924. *Microtus (Chionomys) marakovici* Bolkay, Biol. Hung. *1*, 2: 4. Bjelasnica Mountains, Bosnia, 2,067 m., Yugoslavia.

Dolomys bogdanovi grebenscikovi Martino, 1935

1935. *Dolomys grebenscikovi* Martino, Zap. Russk. Inst. Belgrad, *10:* 84. Senecki Suvati, Bistra Mountains, Macedonia, 2,000 m. Southern Yugoslavia.

Dolomys bogdanovi korabensis Martino, 1937

1937. *Dolomys grebenscikovi korabensis* Martino, Ann. Mag. N.H. *19:* 515. Velika, Korab Mountains, Macedonia, Yugoslavia.

Dolomys bogdanovi preniensis Martino, 1940

1940. *Dolomys bogdanovi preniensis* Martino, Ann. Mag. N.H. *5:* 496. Crno Polje, Prenj Mountains, Hercegovina, 1,300–1,800 m., Yugoslavia.

Genus **LAGURUS** Gloger, 1841

1841. *Lagurus* Gloger, Hand. u. Hilfsbuch d. Naturg, *1:* 97. *Lagurus migratorius* Gloger = *Georychus luteus* Eversmann.

1881. *Eremiomys* Poliakov, Mem. Acad. Imp. Sci. St. Petersb. *29*, 2: 35. (*N.V.*) Reference from Neave. Based on *lagurus* and *luteus*.

1912. *Lemmiscus* Thomas, Ann. Mag. N.H. *9:* 401. *Arvicola curtata* Cope, from North America. Valid as a subgenus.

2 species in the area covered by this list:

Lagurus lagurus, page 675
Lagurus luteus, page 676

For characters of species see Ellerman, 1941, *Fam. Gen. Liv. Rodents, 2:* 634.

Lagurus lagurus Pallas, 1773 — Steppe Lemming

Approximate distribution of species: Southern Russia (east of the Dnieper and south of Ryazan and Gorki Provinces), Western Siberia to Minussinsk district, Kazakstan, east to Zungaria.

LAGURUS LAGURUS LAGURUS Pallas, 1773

1773. *Mus lagurus* Pallas, Reise Russ. *2:* 704. Mouth of Ural River, Western Siberia. Range: Northern and Western Kazakstan, Western Siberia, Lower Volga, Northern Caucasus.

LAGURUS LAGURUS ALTORUM Thomas, 1912

1912. *Lagurus lagurus altorum* Thomas, Ann. Mag. N.H. *9:* 401. Barlik Mountains, Zungaria, Chinese Central Asia. Range: to Semirechyia, Zaisan basin, Southern Kazakstan.

LAGURUS LAGURUS AGGRESSUS Serebrennikov, 1929

1929. *Lagurus lagurus aggressus* Serebrennikov, Ann. Mus. Zool. Leningrad, *30:* 267. Buzuluk steppes, Samara Govt. Russia. Range: Middle Volga, Tambov, Ryazan, Voronej Provinces, Russia.

LAGURUS LAGURUS ABACANICUS Serebrennikov, 1929

1929. *Lagurus lagurus abacanicus* Serebrennikov, Ann. Mus. Zool. Leningrad, *30:* 267. River Abakan, Minussinsk district, Siberia.

LAGURUS LAGURUS OCCIDENTALIS Migulin, 1938

1938. *Lagurus lagurus occidentalis* Migulin, Anim. Ukraine S.S.R., Kiev, 298. Type from Kharkov Province. Range: Ukraine, Russia.

Lagurus luteus Eversmann, 1840 Yellow Steppe Lemming

Approximate distribution of species: Chinese Turkestan, Tsaidam, Mongolia. Formerly Kazakstan, but now said to be extinct there.

LAGURUS LUTEUS LUTEUS Eversmann, 1840

1840. *Georychus luteus* Eversmann, Bull. Nat. Moscow, 25. North-west of Aral Sea, Russian Asia.

1841. *Lagurus migratorius* Gloger, Hand. u. Hilfsb. d. Naturg. *1:* 97. Western Siberia.

Range: now probably confined to Zungaria.

LAGURUS LUTEUS PRZEWALSKII Buchner, 1889

1889. *Eremiomys przewalskii* Buchner, Wiss. Res. Przewalski Cent. Asien, Reisen Zool. Th. *1:* Sauget. 127. Shore of Iche-zaidemin Nor, Northern Tsaidam; also Gass, south of Lob Nor, Sinkiang, Chinese Central Asia. Range: to Mongolia.

Genus **ARVICOLA** Lacepède, 1799

1799. *Arvicola* Lacepede, Tab. des Mamm. 10. *Mus amphibius* Linnaeus.

1836. *Hemiotomys* de Sélys Longchamps, Essai Monogr. sur les Campagnols des Env. de Liège, 7 part.

1857. *Paludicola* Blasius, Saugeth. Deutschlands, 333 (part).

1867. *Praticola* Fatio, Les Campagnols du Bassin du Léman, 36 (part). Not of Swainson, 1837.
1867. *Ochetomys* Fitzinger, S.B. Akad. Wiss. Wien, *56*, 1 : 103. *Mus amphibius* Linnaeus.

1 species: *Arvicola terrestris*, page 677

Arvicola terrestris Linnaeus, 1758 Water Vole

Approximate distribution of species: Britain, France, Belgium, Holland, Spain, Portugal, Switzerland, Italy, Norway, Sweden, Germany, Denmark, Hungary, Yugoslavia, Rumania, Finland, Poland, Russia (Arctic coast to Black Sea and Caucasus), most of Siberia, eastwards to Yakutsk, and Semirechyia; Asia Minor, Northern Syria (has been recorded from Palestine), Persia. In Siberia, the Lena River is roughly the eastern boundary. (Specimens in London from Altai, Baikal area, and Yenesei, etc.)

Arvicola terrestris terrestris Linnaeus, 1758

1758. *Mus terrestris* Linnaeus, Syst. Nat. 10th ed. *1:* 61. Upsala, Sweden.
1771. *Mus paludosus* Linnaeus, Mantissa Plantarum, 2, 522. Sweden.
1827. *Hypudaeus terrestris ater* Billberg, Synops. Faun. Scandinav. 4. Gottland, Sweden.
1827. *Hypudaeus terrestris littoralis* Billberg, *loc. cit.* 5. Småland, Sweden.
1827. *Hypudaeus terrestris aquaticus* Billberg, *loc. cit.* 5. Southern Sweden.

Range: Norway, Sweden, Finland, Estonia, Russia as far east as Vologda, Gorki, Penza, south to Saratov, Voronej and the Polese (Kuznetzov).

Arvicola terrestris amphibius Linnaeus, 1758

1758. *Mus amphibius* Linnaeus, Syst. Nat. 10th ed. *1:* 61. England.
1817. *Lemmus aquaticus* Cuvier, Dict. Sci. Nat. *6:* 306. Substitute for *amphibius*.
1842. *Arvicola americana* Gray, Ann. Mag. N.H. *10:* 266. Supposed to be from South America.
1845. *Arvicola amphibius* subvar. *nigricans* de Sélys Longchamps, Atti della Sesta Riun. degli Sci. Ital. Milano, *1844:* 322, *nom. nud.*

Range: England, Southern Scotland.

Arvicola terrestris scherman Shaw, 1801

1801. *Mus scherman* Shaw, Gen. Zool. *2*, 1 : 75. Strasbourg, Bas Rhin, Eastern France.
(?) 1779. *Spalax minor* Leske, Anfangsgrunde der Nat. *1:* 168. Germany. (*N.V.*)
1801. *Mus amphibius albus* Bechstein, Gem. Nat. Deutsch. 2nd ed. *1:* 985. Thuringia, Germany.
1801. *Mus amphibius canus* Bechstein, *loc. cit.* Thuringia, Germany.
1804. *Mus schermaus* Hermann, Observ. Zool. 59. Strasbourg.
1822. *Arvicola argentoratensis* Desmarest, Mamm. *2:* 281. Strasbourg.
1829. *Lemmus arvalis buffonii* Fischer, Synops. Mamm. 293.

Range: Belgium, France, Germany, Denmark, Bohemia, Yugoslavia, Poland.

Arvicola terrestris monticola de Sélys Longchamps, 1838

1838. *Arvicola monticola* de Sélys Longchamps, Rev. Zool. 249. St. Bertrand de Comminge, Hautes-Pyrénées, France.

ARVICOLA TERRESTRIS ITALICUS Savi, 1839

1839. *Arvicola amphibius* var. *italicus* Savi, Nuovo Giorn. de Lett., Pisa, *37*, 102: 202. Vicinity of Pisa, Italy. (*N.V.*)

1839. *Arvicola pertinax* Savi, Nuovo Giorn. de Lett. Pisa, *37:* 102: 203. (*N.V.*)

(?) 1845. *Arvicola amphibius* var. *minor* de Sélys Longchamps, Atti della Sesta Riun. degli Sci. Ital. Milano, *1844:* 322, *nom. nud.*

Ranges north to Switzerland, and to Yugoslavia (part).

ARVICOLA TERRESTRIS MUSIGNANI de Sélys Longchamps, 1839

1839. *Arvicola musignani* de Sélys Longchamps, Rev. Zool. 8. Near Rome, Italy. (January, 1839, see Miller, 1912, 744.)

1839. *Arvicola destructor* Savi, Nuovo Giorn. Lett. Pisa, *37*, 102: 204. Maremma Grossetana, Tuscany, Italy. (February, 1839, see Miller, 1912, 744.) (*N.V.*)

(?) 1845. *Arvicola musignani* var. *fuliginosus* de Sélys Longchamps, Atti della Sesta Riun. deg. Sci. Ital. Milano, 322, *nom. nud.*

ARVICOLA TERRESTRIS PERSICUS de Filippi, 1865

1865. *Arvicola amphibius* var. *persicus* de Filippi, Viagg. in Persia, 344. Sultanieh, south of Elburz Mountains, Persia.

(?) 1901. *Nesokia argyropus* Cabrera, Bol. Real. Soc. Esp. H.N. *1:* 118. Chagajor, east side Bakhtyari Mountains, 2,500 m., Persia.

1907. *Microtus terrestris armenius* Thomas, Ann. Mag. N.H. *20:* 201. Van, 5,000 ft., Eastern Asia Minor.

Range: Asia Minor, Persia, Transcaucasia.

ARVICOLA TERRESTRIS ILLYRICUS Barrett-Hamilton, 1899

1899. *Microtus musignani illyricus* Barrett-Hamilton, Ann. Mag. N.H. *3:* 225. Bosnia (no exact locality), Yugoslavia. Range: to mouth of Danube, Rumania. This form is very near *italicus*.

ARVICOLA TERRESTRIS SAPIDUS Miller, 1908

1908. *Arvicola sapidus* Miller, Ann. Mag. N.H. *1:* 195. Santo Domingo de Silos, Burgos, Spain. Range: Spain, Portugal, into Southern France.

ARVICOLA TERRESTRIS TENEBRICUS Miller, 1908

1908. *Arvicola tenebricus* Miller, Ann. Mag. N.H. *1:* 196. Near Biarritz, Basses-Pyrénées, France.

1884. *Microtus musiniani* Lataste, Actes Soc. Linn. Bordeaux, *38:* 37. Not *musignani* de Sélys Longchamps.

Range: Pyrenean and South-Western France.

ARVICOLA TERRESTRIS RETA Miller, 1910

1910. *Arvicola amphibius reta* Miller, Proc. Biol. Soc. Washington, *23:* 19. Aberdeen, Scotland.

1832. *Arvicola ater* Macgillivray, Mem. Wernerian N.H. Soc. *6:* 429. Not of Billberg, 1827.

Range: Scotland, except southern portion.

ARVICOLA TERRESTRIS EXITUS Miller, 1910

1910. *Arvicola scherman exitus* Miller, Proc. Biol. Soc. Washington, *23:* 21. St. Gallen, Switzerland.

(?) 1845. *Arvicola terrestris* var. *niger* de Sélys Longchamps, Atti della Sesta Riun. deg. Sci. Ital. Milano, *1844:* 321. Lausanne, Switzerland, *nom. nud.*

(?) 1845. *Arvicola terrestris* var. *castaneus* de Sélys Longchamps, *loc. cit., nom. nud.* Lausanne, Switzerland.

ARVICOLA TERRESTRIS SCYTHICUS Thomas, 1914

1914. *Arvicola terrestris scythicus* Thomas, Ann. Mag. N.H. *13:* 568. Djarkent, Semirechyia, Eastern Russian Turkestan.

ARVICOLA TERRESTRIS MERIDIONALIS Ognev, 1923

1923. *Arvicola amphibius meridionalis* Ognev, Biol. Mitt. Timiarazeff, *1:* 109. Tscherepinski Kanal, Ural district, Russia. Range: Southern Transvolga, Ural basin.

ARVICOLA TERRESTRIS TAURICUS Ognev, 1923

1923. *Arvicola tauricus* Ognev, Biol. Mitt. Timiarazeff, *1:* 109. Tavriskok, Govt. Melitopol, Southern Ukraine, Russia.

ARVICOLA TERRESTRIS OGNEVI Turov, 1926

1926. *Arvicola terrestris ognevi* Turov, Bull. Sci. Inst. Expl. Caucas. *1:* 326. Village of Kalaki, near Mamissonchen Pass, Osetiya Road, Caucasus.

ARVICOLA TERRESTRIS ABRUKENSIS Reinwaldt, 1927

1927. *Arvicola terrestris abrukensis* Reinwaldt, Act. Com. Univ. Tartu, *12:* 23. West Isles, Estonia.

ARVICOLA TERRESTRIS DJUKOVI Ognev & Formozov, 1927

1927. *Arvicola amphibius djukovi* Ognev & Formozov, Ann. Mag. N.H. *19:* 138. Kasi Kumuch, mountains of Daghestan, Caucasus.

ARVICOLA TERRESTRIS BRIGANTIUM Thomas, 1928

1928. *Arvicola amphibius brigantium* Thomas, Ann. Mag. N.H. *1:* 318. Huddersfield, Yorkshire, 760 ft., England.

ARVICOLA TERRESTRIS KURUSCHI Heptner & Formozov, 1928

1928. *Arvicola amphibius kuruschi* Heptner & Formozov, Zool. Anz. *77:* 276. Near Aul Kurusch, Samurski district, Daghestan, Caucasus. Range: basin of River Samur, Daghestan.

ARVICOLA TERRESTRIS TANAITICA Kalabuchow & Rajewski, 1930

1930. *Arvicola amphibius tanaitica* Kalabuchow & Rajewski, Bull. N. Caucas. Pl. Prot. Sta. *5:* 140. Near Glubokaya, on the Don, Russia.

ARVICOLA TERRESTRIS HINTONI Aharoni, 1932

1932. *Arvicola terrestris hintoni* Aharoni, Z. Säuget. *7:* 209. Island of Tel el Sultan, Antioch Lake, Northern Syria.

ARVICOLA TERRESTRIS TATARICUS Ognev, 1933

1933. *Arvicola terrestris tataricus* Ognev, Z. Säuget. *8:* 158. Boundary of former Spasski and Tschistopol districts in Govt. Kazan, Russia. Range: Middle Volga, basin of River Kama.

ARVICOLA TERRESTRIS FERRUGINEUS Ognev, 1933

1933. *Arvicola terrestris ferrugineus* Ognev, Z. Säuget. *8:* 159. Cheshkaia Bay, Arctic coast, Russia.

ARVICOLA TERRESTRIS VOLGENSIS Ognev, 1933

1933. *Arvicola terrestris volgensis* Ognev, Z. Säuget. *8:* 162. East part of Volga delta, Obshorowsky district of State Forest, Russia. Range: Lower Volga.

ARVICOLA TERRESTRIS CAUCASICUS Ognev, 1933

1933. *Arvicola terrestris caucasicus* Ognev, Z. Säuget. *8:* 163. Near Vladikawkaz (Ordzhonikidze), Caucasus. Range: Eastern Ciscaucasia.

ARVICOLA TERRESTRIS CUBANENSIS Ognev, 1933

1933. *Arvicola terrestris cubanensis* Ognev, Z. Säuget. *8:* 164. Kuban River, (Grivenskaya). Southern Russia.

ARVICOLA TERRESTRIS TUROVI Ognev, 1933

1933. *Arvicola terrestris turovi* Ognev, Z. Säuget. *8:* 165. Near Kotljarevskaja, River Tschernaja, Kabarda (N. Caucasus), Russia.

ARVICOLA TERRESTRIS JENISSEJENSIS Ognev, 1933

1933. *Arvicola terrestris jenissejensis* Ognev, Z. Säuget. *8:* 170. River Abakan, 150 km. south-west of Minussinsk, Siberia. Range: Sayan Mountains and adjacent areas.

ARVICOLA TERRESTRIS KUZNETZOVI Ognev, 1933

1933. *Arvicola terrestris kuznetzovi* Ognev, Z. Säuget. *8:* 171. Near Podgornoe, Urdshar River, Semipalatinsk, Siberia. Range: Tarbagatai Mountains.

ARVICOLA TERRESTRIS JACUTENSIS Ognev, 1933

1933. *Arvicola terrestris jacutensis* Ognev, Z. Säuget. *8:* 172. Near Yakutsk, Eastern Siberia.

ARVICOLA TERRESTRIS KORABENSIS Martino, 1937

1937. *Arvicola terrestris korabensis* Martino, Ann. Mag. N.H. *19:* 516. Cos Alija, Korab Mountains, Yugoslavia.

Arvicola terrestris obensis Egorin, 1939

1939. *Arvicola terrestris obensis* Egorin, Trav. Biol. Inst. Tomsk, *6:* 142. Narym district and Surgut, Western Siberia.

Arvicola terrestris variabilis Ognev, 1933, Z. Säuget. *8:* 169, Barabinsk steppes (Govt. Tomsk), Siberia (Range: forest steppes of Western Siberia, Northern Kazakstan), is preoccupied (not of Rörig & Börner, 1905) and is renamed *Microtus terrestris barabensis* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 711.

Arvicola terrestris rufescens (*Microtus terrestris rufescens* Satunin, 1908), Mitt. Kaukas. Mus. *4:* 50, Pokun Syrt, Podkumka River, Karacai Territory, Northern Caucasus, is preoccupied (not of de Sélys Longchamps, 1836) and is renamed *Microtus terrestris karatshaicus* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 711.

Arvicola terrestris uralensis Egorin, 1940, Zap. Po. Fauna Flora Sibirica, 1, Nizovya, River Ob (not *ouralensis* Poliakoff, 1881), is renamed *Microtus terrestris hyperryphaeus* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 711.

Genus **BLANFORDIMYS** Argyropulo, 1933

1933. *Blanfordimys* Argyropulo, Z. Säuget. *8:* 182. *Microtus bucharicus* Vinogradov.

1 species: *Blanfordimys afghanus*, page 681

Blanfordimys afghanus Thomas, 1912 — Afghan Vole

Approximate distribution of species: Afghanistan, and Southern Russian Turkestan (Western Tadjikistan, South-Eastern Turkmenia).

Blanfordimys afghanus afghanus Thomas, 1912

1912. *Microtus* (*Phaiomys*) *afghanus* Thomas, Ann. Mag. N.H. *9:* 349. Gulran, about 35° N., 62° E., Afghanistan.

Blanfordimys afghanus bucharicus Vinogradov, 1928

1928. *Microtus bucharicus* Vinogradov, Abh. Pamir Exped. *8:* 14. Zeravshankette, 8 km. south of Pendjakent, 2,200 m. Russian Pamirs.

Genus **PITYMYS** Mc.Murtrie, 1831

1831. *Pitymys* Mc.Murtrie, Cuviers Anim. Kingd., American ed. *1:* 434. *Psammomys pinetorum* Le Conte, from Georgia, United States.

1831. *Ammomys* Bonaparte, Saggio Distrib. Metod. Anim. Vert. 20. *Psammomys pinetorum* Le Conte.

1849. *Neodon* Hodgson, Ann. Mag. N.H. *3:* 203. *Neodon sikimensis* Hodgson. Valid as a subgenus.

1857. *Pedomys* Baird, Mamm. North Amer. 517. *Arvicola austerus* Le Conte = *Hypudaeus ochrogaster* Wagner, from North America. Valid as a subgenus.

PITYMYS [*contd.*]

1863. *Phaiomys* Blyth, J. Asiat. Soc. Bengal, *32*, 1: 89. *Phaiomys leucurus* Blyth. Valid as a subgenus.

1867. *Terricola* Fatio, Les Campagnols du Bassin du Léman, 36. Not of Fleming, 1828. (Based on *subterraneus* and *savii*.)

1877. *Microrus* Forsyth Major, Atti della Soc. Toscana Sci. Nat. *3:* 126. *Arvicola nebrodensis* Mina-Palumbo. Not of Ehrenberg, 1831.

1919. *Arbusticola* Shidlovsky, Tiflis Bull. Terr. Exper. Stat., No. 2, 21. *Microtus rubelianus* Shidlovsky = *Microtus* (*Pitymys*) *majori* Thomas.

8 species in the area covered by this list:

Pitymys carruthersi, page 683
Pitymys duodecimcostatus, page 689
Pitymys irene, page 684
Pitymys juldaschi, page 683
Pitymys leucurus, page 682
Pitymys savii, page 688
Pitymys sikimensis, page 683
Pitymys subterraneus, page 684

As here understood, this genus in the present region comprises three subgenera: *Pitymys*, *Neodon* and *Phaiomys*. The two latter are often referred to *Microtus*, but if this is done, then *Pitymys* should also be regarded as a subgenus of that genus.

Subgenus *PHAIOMYS* Blyth, 1863

Pitymys leucurus Blyth, 1863 — Blyth's Vole

Approximate distribution of species: Tibet, Chinese Turkestan, Kashmir, to Mt. Everest.

PITYMYS LEUCURUS LEUCURUS Blyth, 1863

1863. *Phaiomys leucurus* Blyth, J. Asiat. Soc. Bengal, *32:* 89. Near Lake Chomoriri (Tsomoriri), Ladak.

1875. *Arvicola blythi* Blanford, J. Asiat. Soc. Bengal, *44*, 2: 107. Renaming of *leucurus*. (If this species should be referred to *Microtus* (called *Arvicola* in Blanford's time), then *leucurus* Blyth would be preoccupied by *leucurus* Gerbe, 1852, a race of *M. nivalis*.)

1889. *Microtus strauchi* Büchner, Wiss. Res. Przewalski Cent. Asien, Reisen. Zool. Th. *1:* Säugeth. 121. Dynssy-obo district of Burchan-Budda Range, Tibet (now probably Chinese Turkestan).

Range: Tibet, Chinese Turkestan (specimens in B.M.), Ladak.

PITYMYS LEUCURUS FUSCUS Büchner, 1889

1889. *Microtus strauchi* var. *fuscus* Büchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1:* Säuget. 125. Dy-tschju River (upper reaches of Yellow and Blue Rivers), approximately 34° N., 93° E., Tibet.

PITYMYS LEUCURUS WALTONI Bonhote, 1905

1905. *Microtus* (*Phacomys*) (sic) *waltoni* Bonhote, Abstr. P.Z.S. 14; P.Z.S. 306. Lhasa, Tibet.

Pitymys leucurus petulans Wroughton, 1911

1911. *Microtus (Phaiomys) waltoni petulans* Wroughton, J. Bombay N.H. Soc. *20:* 931. Teza, Upper Sutlej Valley, Northern India.

Pitymys leucurus everesti Thomas & Hinton, 1922

1922. *Phaiomys evcresti* Thomas & Hinton, Ann. Mag. N.H. *9:* 182. East Mt. Everest, 17,000 ft., north of Nepal.

Subgenus *NEODON* Hodgson, 1849

Of four species listed here, the British Museum does not possess representative material for *juldaschi*. Russian authors compare this only with *carruthersi*, from which it differs in being larger in skull and hindfoot length, and in having the skull more strongly ridged. *P. sikimensis* stands well apart from *irene* and *carruthersi* with its small bullae and unusually complex first lower molar, and proportionately longer tail. *P. carruthersi* differs from *P. irene* in our material in having relatively longer palate, and longer tail. Very likely *irene* is normally smaller in skull length than *juldaschi*; and *sikimensis* normally has longer tail than *juldaschi* as indicated in Kuznetzov's key.

Pitymys sikimensis Hodgson, 1849 Sikkim Vole

Approximate distribution of species: Sikkim, Bhutan.

Pitymys sikimensis Hodgson, 1849

1849. *Neodon sikimensis* Hodgson, Ann. Mag. N.H. *3:* 203. Sikkim. See also 1851, Cat. Mamm. Mus. E. India Co. 146.

1863. *Arvicola thricolis* Gray, Cat. Hodgson's Coll. B.M. ed. 2, 10, *nom. nud.* Darjeeling.

Range: as above, west to Nepal frontier.

Pitymys juldaschi Severtzov, 1879

Approximate distribution of species: Pamir and Alaiskii Valley, Russian Turkestan.

Pitymys juldaschi Severtzov, 1879

1879. *Arvicola juldaschi* Severtzov, Zapiski Turkest. Ot. Obs. Lub. Estest. *1:* 63. Lake Karakul, in Pamir Mountains. (*N.V.*)

1899. *Microtus pamirensis* Miller, Proc. Acad. Nat. Sci. Philadelphia, 287. Tagdumbash, 12,000 ft., Pamir Mountains.

(Kuznetzov figures the first lower molar of this species, which agrees with that of *carruthersi*, and this indicates it is correctly generically placed as here understood.)

Pitymys carruthersi Thomas, 1909 Carruthers' Vole

Approximate distribution of species: mountains of South-Eastern Russian Turkestan. "Fairly widely distributed in mountains of Central Asia" (Kuznetzov, who does not give details).

Pitymys carruthersi Thomas, 1909

1909. *Microtus (Pitymys) carruthersi* Thomas, Ann. Mag. N.H. *3:* 263. Hissar Mountains, 100 miles east of Samarkand, 9,000–10,000 ft., Russian Turkestan.

Pitymys irene Thomas, 1911

Approximate distribution of species: China, states of Kansu, Szechuan, Yunnan, to Northern Burma, and Kham (E. Tibet).

Pitymys irene irene Thomas, 1911

1911. *Microtus irene* Thomas, Abstr. P.Z.S. 5; P.Z.S. 173 (February, 1911). Tatsienlu, Szechuan, China. Range: to Yunnan (part).

Pitymys irene oniscus Thomas, 1911

1911. *Microtus oniscus* Thomas, Ann. Mag. N.H. *8:* 723 (December, 1911). Forty miles south-east of Taochou (Taochow), Kansu, China.

Pitymys irene forresti Hinton, 1923

1923. *Neodon forresti* Hinton, Ann. Mag. N.H. *11:* 156. Mekong-Yangtze Divide, 27°30′ N., Yunnan, 11,000–12,000 ft., China. Range: Yunnan (part), into Northern Burma.

Subgenus *PITYMYS* McMurtrie, 1831

It is my belief that there are two, or at most three, species of this subgenus in Eurasia; the forms available for examination (most of those dealt with by Miller, *Cat. Mamm. Western Europe*, 1912, the Turkish form, a few since described from Europe and the Persian form) may be roughly keyed as below.

1. Upper incisors pro-odont; diastema length exceeds 7 mm., and usually more than 31 per cent. of occipitonasal length. *P. duodecimcostatus*
   Upper incisors less pro-odont; diastema length normally below 7 mm., usually less than 30 per cent. of occipitonasal length. —— 2
2. M 3 with three clear inner folds. *P. subterraneus*
   M 3 usually, not always, with two clear inner folds (four exceptions in 40 specimens). *P. savii*

Perhaps the last represents merely further southern races of *subterraneus*. It seems I measure the diastema in a slightly different way from Miller, 1912, *Cat. Mamm. Western Europe*. With few exceptions those forms referred here to *duodecimcostatus* have, in Miller, the diastema over 8 mm., while the remainder do not have the diastema reaching 8 mm., so the difference holds good.

Pitymys subterraneus de Sélys Longchamps, 1836 European Pine Vole (Pine Mouse)

Approximate distribution of species: Belgium, Holland, France, Germany (part), Switzerland, Northern Italy, Czechoslovakia, Poland, Hungary, Yugoslavia,

Rumania, Ukraine and Voronej Province in Russia, Caucasus, Asia Minor, east to Elburz Mountains in Persia. (See Ellerman, 1948, *P.Z.S. 118*, 3: 784.)

PITYMYS SUBTERRANEUS SUBTERRANEUS de Sélys Longchamps, 1836

1836. *Arvicola subterraneus* de Sélys Longchamps, Essai Monogr. sur les Campagnols des env. de Liége, 10. Waremme, Liége, Belgium.
1845. *Hypudaeus rufescente-fuscus* Schinz, Syn. Mamm. *2:* 240. Uri, Switzerland.
1845. *Hypudaeus rufofuscus* Schinz, *loc. cit.*
1900. *Arvicola agrestis fusca* Fatio, Rev. Suisse Zool. *8:* 472. Untervats, Grisons, Switzerland.

Range: France, Belgium, Switzerland, to Yugoslavia and Transylvania.

PITYMYS SUBTERRANEUS MULTIPLEX Fatio, 1905

1905. *Arvicola multiplex* Fatio, Arch. Sci. Phys. Nat. Genève, 4th ser. *19:* 193. Lugano, Ticino, Switzerland.
1906. *Microtus leponticus* Thomas, Ann. Mag. N.H. *17:* 419. Lugano, Ticino, Switzerland.

Range: Switzerland (part), and Northern Italy.

PITYMYS SUBTERRANEUS MAJORI Thomas, 1906

1906. *Microtus* (*Pitymys*) *majori* Thomas, Ann. Mag. N.H. *17:* 419. Sumela, south of Trebizond, Asia Minor.
1919. *Microtus* (*Arbusticola*) *rubelianus* Shidlovsky, Tiflis Bull. Ter. Exp. Stat. *2:* 21. Mountains of Transcaucasia, near Trebizond, Asia Minor.

PITYMYS SUBTERRANEUS SCHELKOVNIKOVI Satunin, 1907

1907. *Microtus schelkovnikovi* Satunin, Mitt. Kauk. Mus. *3:* 243. Forest on path to village Dzi, Caucasus.

PITYMYS SUBTERRANEUS CAPUCINUS Miller, 1908

1908. *Pitymys subterraneus capucinus* Miller, Ann. Mag. N.H. *1:* 202. Near Salon de Capucin, Mont-Dore, Puy-de-Dôme, 4,000 ft., France.

PITYMYS SUBTERRANEUS DACIUS Miller, 1908

1908. *Pitymys dacius* Miller, Ann. Mag. N.H. *1:* 202. Gageni, Prahova, at foot of Carpathians, north-west of Bucharest, Rumania.

PITYMYS SUBTERRANEUS FATIOI Mottaz, 1909

1909. *Pitymys multiplex fatioi* Mottaz, Bull. Soc. Zool. de Genève, *1:* 180. Zermatt, Valais, Switzerland.

PITYMYS SUBTERRANEUS DRUENTIUS Miller, 1911

1911. *Pitymys druentius* Miller, Proc. Biol. Soc. Washington, *24:* 39. Terres-plaines, near Barcelonette, Basses-Alpes, France.
1852. *Arvicola* (*Microtus*) *selysii* Gerbe, Rev. Mag. Zool. *4:* 159. Not of Bonaparte, 1845.

PITYMYS SUBTERRANEUS COLCHICUS Shidlovsky, 1919

1919. *Microtus (Arbusticola) rubelianus colchicus* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *2:* 8. Northern Dzhgerdy, Kutais district, Transcaucasia. Probably = *majori* (Kuznetzov).

PITYMYS SUBTERRANEUS DAGHESTANICUS Shidlovsky, 1919

1919. *Microtus (Arbusticola) rubelianus daghestanicus* Shidlovsky, Tiflis Bull. Terr Exper. Stat. *2:* 22. Near Khiso, Daghestan, Caucasus.

PITYMYS SUBTERRANEUS INTERMEDIUS Shidlovsky, 1919

1919. *Microtus (Arbusticola) rubelianus intermedius* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *2:* 22. Near Suram, southern parts of Central Caucasus.

PITYMYS SUBTERRANEUS UKRAINICUS Vinogradov, 1922

1922. *Pitymys ukrainicus* Vinogradov, Isvestia Severnoi Oblasti Strasta, *3:* 7–10, figs. 1a–d. Kharkov Govt. (Zmiev), Ukraine, Russia. (*N.V.*)

PITYMYS SUBTERRANEUS CISCAUCASICUS Ognev, 1924

1924. *Arbusticola rubelianus ciscaucasicus* Ognev, Rodents of N. Caucasus, 34. Near Vladikawkaz (Ordzhonikidze), Northern Caucasus.

PITYMYS SUBTERRANEUS ORIENTALIS Dal Piaz, 1924

1924. *Pitymys fatioi orientalis* Dal Piaz, Studi Trent. *5*, 4: 13. Trentino, Northern Italy.

PITYMYS (?) SUBTERRANEUS ZIMMERMANNI Matschie, 1924

1924. *Pitymys zimmermanni* Matschie, Pallasia, *1:* 176. Neighbourhood of Munzig, district of Meissen, Saxony, Germany.

PITYMYS SUBTERRANEUS TRANSSYLVANICUS Ehik, 1924

1924. *Pitymys transsylvanicus* Ehik, Ann. Mus. Budapest, *21:* 159. Mountains Fogaras, near Kercz, near Bulea Lake, 2,046 m., Hungary.

PITYMYS SUBTERRANEUS KUPELWIESERI Wettstein, 1925

1925. *Pitymys kupelwieseri* Wettstein, Anz. Akad. Wiss. Wien, *62:* 31. Biological Station in Lunz, Lower Austria.

PITYMYS SUBTERRANEUS BRAUNERI Martino, 1926

1926. *Pitymys multiplex brauneri* Martino, Ann. Mus. Budapest, *23:* 166. Kraljevo, Serbia.

PITYMYS SUBTERRANEUS WETTSTEINI Ehik, 1926

1926. *Pitymys subterraneus wettsteini* Ehik, Ann. Mus. Budapest, *24:* 63. Hungary, no exact locality.

PITYMYS SUBTERRANEUS HUNGARICUS Ehik, 1926

1926. *Pitymys dacius hungaricus* Ehik, Ann. Mus. Budapest *24:* 64. Budafok, near Budapest, Hungary.

PITYMYS SUBTERRANEUS LIECHTENSTEINI Wettstein, 1927

1927. *Pitymys liechtensteini* Wettstein, Anz. Akad. Wien, *64:* 2. Summit of Mali Rainac, Velebit, near Krasno, Croatia, Yugoslavia.

PITYMYS SUBTERRANEUS INCERTOIDES Wettstein, 1927

1927. *Pitymys incertoides* Wettstein, Anz. Akad. Wien, *64:* 3. Gschnitztal, North Tyrol, Austria.

PITYMYS (?) SUBTERRANEUS EHIKI Wettstein, 1927

1927. *Pitymys ehiki* Wettstein, Anz. Akad. Wien, *64:* 3. Martinitz, near Klobouk, Mahren, Moravia, Czechoslovakia.

PITYMYS SUBTERRANEUS MATRENSIS Ehik, 1930

1930. *Pitymys subterraneus matrensis* Ehik, Ann. Mus. N.H. Hung. *27:* 252. Matra Mountains, 940–1,000 m., Hungary.

PITYMYS SUBTERRANEUS NYIRENSIS Ehik, 1930

1930. *Pitymys nyirensis* Ehik, Ann. Mus. N.H. Hung. *27:* 255. Mateszalka, Szatmar Comitat, Hungary.

PITYMYS SUBTERRANEUS ATRATUS Stein, 1931

1931. *Pitymys subterraneus atratus* Stein, Mitt. Zool. Mus. Berlin, *17:* 293. Trebnitz district, Silesia.

PITYMYS SUBTERRANEUS MARTINOI Ehik, 1935

1935. *Pitymys nyirensis martinoi* Ehik, Allat. Kozlem, *32:* 60. Babje-gore, Pozega district, Slavonia, Yugoslavia.

PITYMYS SUBTERRANEUS FINGERI Neuhäuser, 1936

1936. *Pitymys majori fingeri* Neuhäuser, Z. Säuget. *11:* 159. Karadere, Northern Bolu, Asia Minor.

PITYMYS SUBTERRANEUS MUSTERSI Martino, 1937

1937. *Pitymys mustersi* Martino, Ann. Mag. N.H. *19:* 516. Stirovica, Korab Mountains, 1,300 m., Yugoslavia.

PITYMYS SUBTERRANEUS NASAROVI Shidlovsky, 1938

1938. *Pitymys* (*Arbusticola*) *daghestanicus nasarovi* Shidlovsky, Bull. Mus. Georgia, *9a:* 100. Golitzino, Azerbaijan region, Caucasus.

PITYMYS SUBTERRANEUS HERCEGOVINIENSIS Martino, 1940

1940. *Pitymys multiplex hercegoviniensis* Martino, Ann. Mag. N.H. *5:* 497. Tisovica, Prenj Mountains, Hercegovina, Yugoslavia.

PITYMYS SUBTERRANEUS KLOZELI Ehik, 1942

1942. *Pitymys klozeli* Ehik, Ann. H.N. Mus. Nat. Hung. Zool. *35:* 63. Dregus, Kelemen Mountains, Siebenburgen, Hungary.

Microtus (Pitymys) majori vinogradovi Sviridenko, 1936, Bull. N. & In-Ta Zool. Moscow State Univ., No. 3 (N.V.), Labinski and Maykopski regions (? Caucasus), is said to be preoccupied (not of Fetisov, 1936) and is renamed *Microtus majori labensis* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 711.

Pitymys savii de Sélys Longchamps, 1838

Approximate distribution of species: Italy, Sicily, Southern France, Northern and Central Spain, Portugal.

PITYMYS SAVII SAVII de Sélys Longchamps, 1838

1838. *Arvicola savii* de Sélys Longchamps, Rev. Zool. 248. Neighbourhood of Pisa, Italy.

1845. *Arvicola selysii* Bonaparte, Atti della Sesta Riun. degli Sci. Ital. Milano, *1844:* 350.

PITYMYS SAVII PYRENAICUS de Sélys Longchamps, 1847

1847. *Arvicola pyrenaicus* de Sélys Longchamps, Rev. Zool. 305. Bagneres de Bigorre, Hautes-Pyrénées, France.

PITYMYS SAVII NEBRODENSIS Mina-Palumbo, 1868

1868. *Arvicola nebrodensis* Mina-Palumbo, Ann. Agric. Sicil. *12:* 61. (N.V.) See Miller, 1913, Proc. Biol. Soc. Washington, *26:* 81. Le Madonie, Sicily.

PITYMYS SAVII LUSITANICUS Gerbe, 1879

1879. *Arvicola (Microtus) lusitanicus* Gerbe, Rev. Mag. Zool. 3rd ser. *7:* 44. Portugal.

PITYMYS (?) SAVII GERBEI Gerbe, 1879

1879. *Arvicola (Microtus) gerbii* Gerbe, Le Naturaliste, Paris, *1:* 51. Dréneuf, Loire-Inférieure, France.

PITYMYS SAVII MARIAE Forsyth Major, 1902

1902. *Microtus (Pitymys) mariae* Forsyth Major, Ann. Mag. N.H. *15:* 515. Villalva, Lugo, Galicia, Spain.

PITYMYS SAVII BRUNNEUS Miller, 1908

1908. *Pitymys pyrenaicus brunneus* Miller, Ann. Mag. N.H. *1:* 203. Forest of Boucomme, Gers, 250 m., France.

PITYMYS SAVII PLANICEPS Miller, 1908

1908. *Pitymys planiceps* Miller, Ann. Mag. N.H. *1:* 203. Barèges, Hautes-Pyrénées, about 1,000 ft., France. Based apparently on one skull only, external characters not known.

Pitymys savii pelandonius Miller, 1908

1908. *Pitymys pelandonius* Miller, Ann. Mag. N.H. *1:* 204. Silos, Burgos, about 3,000 ft., Spain.

Pitymys savii depressus Miller, 1908

1908. *Pitymys depressus* Miller, Ann. Mag. N.H. *1:* 204. Rascafria, Sierra de Guadarrama (south side), Province of Madrid, Spain.

Pitymys savii hurdanensis Agacino, 1938

1938. *Pitymys mariae hurdanensis* Agacino. Mammalia. *2.* 40. Linares de Riofrio, Salamanca, Central Spain.

Pitymys duodecimcostatus de Sélys Longchamps, 1839 Mediterranean Pine Vole

Approximate distribution, as here understood: Southern France, Spain, Portugal; Yugoslavia, possibly Greece. (Status of Greek form provisional; it is very little known, and possibly might represent *P. savii*.)

Pitymys duodecimcostatus duodecimcostatus de Sélys Longchamps, 1839

1839. *Arvicola duodecimcostatus* de Sélys Longchamps, Rev. Zool. 8. Montpelier, Gard, Southern France. Range: known from a few places in South-Eastern France, Gard, near Marseilles, Var.

Pitymys duodecimcostatus ibericus Gerbe, 1854

1854. *Arvicola ibericus* Gerbe, Rev. Mag. Zool. *6:* 400. Province of Murcia, Spain. Range: coastal regions of South-Eastern Spain.

Pitymys duodecimcostatus thomasi Barrett-Hamilton, 1903

1903. *Microtus* (*Pitymys*) *thomasi* Barrett-Hamilton, Ann. Mag. N.H. *11:* 306. Vranici, Montenegro, Yugoslavia.

Pitymys duodecimcostatus centralis Miller, 1908

1908. *Pitymys ibericus centralis* Miller, Ann. Mag. N.H. *1:* 205. Near Silos, Burgos, about 3,000 ft., Spain. Ranges to Portugal, and south to Valencia and Seville.

Pitymys duodecimcostatus regulus Miller, 1908

1908. *Pitymys ibericus regulus* Miller, Ann. Mag. N.H. *1:* 206. Alhambra Hill (north slope), Granada, Spain. Range includes Malaga.

Pitymys duodecimcostatus provincialis Miller, 1909

1909. *Pitymys provincialis* Miller, Ann. Mag. N.H. *3:* 420. Saint-Gilles, Gard, Southern France. Range includes Var, Southern France. Possibly a valid species, though not yet known to occur in the same localities as the typical race.

PITYMYS (?) DUODECIMCOSTATUS ATTICUS Miller, 1910

1910. *Pitymys atticus* Miller, Ann. Mag. N.H. *6:* 460. Kephissia, near Athens, Greece.

(?) 1926. *Pitymys byroni* Bolkay, Glasnik Zem. Mus. Sarajevo, 171. Kephissia, Attica, Greece.

Both of these forms are apparently very little known, and the differences noted to separate the latter from the former could be covered by individual variation if representative material were collected. The inclusion of this form in the present species is not sure. Evidently no fully measurable skulls are known for either of the names. Possibly it represents *P. savii.*

PITYMYS DUODECIMCOSTATUS PASCUUS Miller, 1911

1911. *Pitymys ibericus pascuus* Miller, Proc. Biol. Soc. Washington, *24:* 39. Dehesa de Valencia, Prov. of Valencia, Spain.

1908. *Pitymys ibericus fuscus* Miller, Ann. Mag. N.H. *1:* 206. Not of Fatio, 1900.

PITYMYS DUODECIMCOSTATUS FLAVESCENS Cabrera, 1924

1924. *Pitymys flavescens* Cabrera, Publ. Cien. Nat. Barcelona, *7,* 3: 13. Lerida, Artesa de Segre, Catalonia, Spain.

Genus **MICROTUS** Schrank, 1798

1798. *Microtus* Schrank, Fauna Boica, *1,* 1: 72. *Microtus terrestris* Schrank = *Mus arvalis* Pallas.

1817. *Mynomes* Rafinesque, Amer. Monthly Mag. *2:* 45. *Mynomes pratensis* Rafinesque = *Arvicola pennsylvanicus* Ord from North America. (*N.V.*)

1857. *Agricola* Blasius, Säugeth. Deutschlands, 334. *Mus agrestis* Linnaeus.

1857. *Chilotus* Baird, Mamm. North Amer. 516. *Arvicola oregoni* Bachman, from North America. Valid as a subgenus.

1867. *Sylvicola* Fatio, les Campagnols du Bassin du Léman, 63. Not of Harris, 1782.

1887. *Lasiopodomys* Lataste, Ann. Mus. Civ. Stor. Nat. Genova, 2a, *4:* 268. *Arvicola brandti* Radde. Valid as a subgenus.

1890. *Campicola* Schulze, Schriften Naturw. Viereins d. Harzes in Wernigerode, *5:* 24. Contained *arvalis* and *agrestis.*

1894. *Tetramerodon* Rhoads, Proc. Acad. Nat. Sci. Philadelphia, 282. *Arvicola tetramerus* Rhoads, from North America.

1894. *Aulacomys* Rhoads, Amer. Nat. *28:* 182. *Aulacomys arviculoides* Rhoads, from North America.

1899. *Euarvicola* Acloque, Faune de France, Mamm. 49. *Mus agrestis* Linnaeus.

1901. *Stenocranius* Kastschenko, Ann. Mus. St. Pétersb. *6:* 167. *Arvicola slowzowi* Poliakoff = *Mus gregalis* Pallas. Valid as a subgenus.

1908. *Chionomys* Miller, Ann. Mag. N.H. *1:* 97. *Arvicola nivalis* Martins.

1911. *Proedromys* Thomas, P.Z.S. 177. *Proedromys bedfordi* Thomas. Valid as a subgenus.

1914. *Alexandromys* Ognev, Moskva Dnev. Zool. otd. obsc. liub. jest. *2:* 109. *Microtus pelliceus* Thomas.

1933. *Sumeriomys* Argyropulo, Z. Säuget. *8:* 180. *Mus socialis* Pallas.

1941. *Lemmimicrotus* Tokuda, Biogeog. Tokyo, *4,* 1: 68. *Arvicola mandarinus* Milne-Edwards.

25 species in the area covered by this list:

Microtus agrestis, page 702
Microtus arvalis, page 696
Microtus bedfordi, page 709
Microtus brandti, page 709
Microtus cabrerae, page 701
Microtus clarkei, page 702
Microtus fortis, page 701
Microtus gregalis, page 710
Microtus gud, page 692
Microtus guentheri, page 696
Microtus hyperboreus, page 708
Microtus igmanensis, page 701
Microtus irani, page 695
Microtus kikuchii, page 702
Microtus mandarinus, page 709
Microtus middendorffi, page 707
Microtus millicens, page 708
Microtus montebelli, page 700
Microtus nivalis, page 693
Microtus oeconomus, page 705
Microtus orcadensis, page 700
Microtus roberti, page 692
Microtus socialis, page 694
Microtus transcaspicus, page 700
Microtus ungurensis, page 701

On preliminary diagnosis of groups and characters for Palaearctic species see Ellerman, 1941, *Fam. Gen. Liv. Rodents, 2:* 594. *M. bedfordi* (*Proedromys*, p. 617) may be regarded as a subgenus of *Microtus* (cf. Simpson, 1945). *M. brandti* (*Lasiopodomys*, p. 616) is close to *mandarinus* (p. 594), but differs in its more hairy sole of hindfoot, slightly larger claws, and colour details; also the ridges of the skull fuse to form median crest in *brandti*, but not so in *mandarinus* specimens available to me. I am inclined to follow Neuhäuser (1936) and recognize a species *M. gud* for the Caucasian and Turkish *nivalis*-like forms, as listed below, which have the third upper molar very complex. I have not seen *M. hyperboreus* which stands nearest *middendorffi*, but differs in cranial characters, notably larger bullae as figured by Kuznetzov, 1944. *Microtus clarkei* should have been made type of a species group in my second volume. It differs from the great majority of *Microtus*, and from all the more or less normal-toothed species in its long tail, which normally exceeds half the head and body length. Possibly the Formosan *M. kikuchii*, which is unrepresented in the British Museum, is allied. The latter is well figured in Aoki & Tanaka, 1941, *Mem. Faculty Sci. & Agric. Taihoku Imp. Univ. 23*, 4: 135, a most excellent work giving illustrations of all Muridae from Formosa. It seems larger than any *clarkei* specimen available to me, with its second upper molar normal (*arvalis*-like, whereas *clarkei* has M 2 like that of *agrestis*). The third upper molar in *kikuchii* seems very variable individually. Its tail is much longer than *clarkei* (80–98 mm. *kikuchii*, 60–67 mm. *clarkei*). The *socialis* group is most easily distinguished from the more normal *guentheri-arvalis-agrestis* branch by its enlarged bullae. *M. irani*, which I formerly supposed was a race of it, seems so much larger in size of skull that I give it specific rank. The *guentheri* group is most easily distinguished from *agrestis*, *arvalis*, etc. by its shortened tail (normally below a quarter of head and body length). *M. cabrerae* does not belong to it, but rather in the *arvalis* group. There are eight species in the *arvalis* group, which are poorly distinguishable. It seems that *arvalis* has a very wide range in Eurasia, and from it have evolved, intermittently, various forms which are much like it but are larger in skull size, at least on average. These include *fortis*, Eastern Asia; *cabrerae*, Spain; *orcadensis*, Orkneys; *ungurensis*, Transbaikalia; *montebelli*, Japan; *transcaspicus*, Transcaspia-

Afghanistan; and apparently also *igmanensis*, Yugoslavia, which is unrepresented in London. All those represented can be defined in our material, but the differences do not amount to much. *M. fortis* differs from the allied species by its relatively longer tail. The "*calamorum* group", Ellerman, 1941, *2:* 596, should have been called the *fortis* group, since *calamorum* is a race of *fortis*.

Subgenus *MICROTUS* Schrank, 1798

Microtus roberti Thomas, 1906 — Robert's Vole

Approximate distribution of species: Northern Asia Minor, Caucasus.

MICROTUS ROBERTI ROBERTI Thomas, 1906

1906. *Microtus roberti* Thomas, Ann. Mag. N.H. *17:* 418. Sumela, south of Trebizond, Northern Asia Minor.

MICROTUS ROBERTI PSHAVUS Shidlovsky, 1919

1919. *Microtus (Chionomys) pshavus* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *5:* 38. Source of River Iora, Mgelat-Zihe (Kapari), 20 versts south-west of Mt. Borbalo, Caucasus.

MICROTUS ROBERTI PERSONATUS Ognev, 1924

1924. *Chionomys personatus* Ognev, Rodentia N. Caucasus, 39. Near Tarskaya, Vladikawkaz (Ordzhonikidze), Caucasus.

Microtus roberti occidentalis Turov, 1928, Arb. Naud. Kaukas. Assoc. *44:* 27 (near Lake Kardavach, Caucasus reserve), is preoccupied (not of Peale, 1848), and has been renamed *Microtus roberti circassicus* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 711.

Microtus gud Satunin, 1909

Approximate distribution of species: Northern Asia Minor, Caucasus. Russian authors refer this to *nivalis* as races; but that species normally has the third upper molar very simplified, whereas *gud* and allies, as listed by Neuhäuser (1936), has this tooth very complex, like *roberti*. The larger bullae of *gud*, and the colour, are like *nivalis*, contrasting with *roberti*. The typical race is not represented in London, but we have the other three forms.

MICROTUS GUD GUD Satunin, 1909

1909. *Microtus gud* Satunin, Beitr. Kenntnis. Sauget. 4. Gudaur, near Krestovskii Pass, Caucasus (Kuznetzov).

MICROTUS GUD OSETICUS Shidlovsky, 1919

1919. *Microtus (Chionomys) nivalis osseticus* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *5:* 36. Near Village Edisi, Upper River Bolshaya Liakhva, Caucasus.

? 1919. *Microtus (Chionomys) nivalis osseticus* ab. *lucidus* Shidlovsky, *loc. cit.* Village Edisi, Caucasus.

Microtus gud neujukovi Formozov, 1931

1931. *Chionomys nivalis neujukovi* Formozov, Folia Hydrob. Riga. *3*. 81. Bolschaja Loba, Maikop district, North-Western Caucasus.

Microtus gud lasistanius Neuhäuser, 1936

1936. *Microtus (Chionomys) gud lasistanius* Neuhäuser, Z. Säuget. *11:* 160. Varsambeg Dag, Vilayet Risa, Northern Asia Minor.

Microtus nivalis Martins, 1842 Snow Vole

Approximate distribution of species: Northern Spain, France, Southern Germany, Poland, Switzerland, Northern Italy, Austria, Yugoslavia, Rumania, Hungary, Caucasus, South-Western Turkestan (Turkmenia), Asia Minor, Palestine.

Microtus nivalis nivalis Martins, 1842

1842. *Arvicola nivalis* Martins, Rev. Zool. 331. Faulhorn, Bernese Oberland, Switzerland.

1843. *Hypudaeus alpinus* Wagner, Schreb. Säuget. Suppl. *3:* 576. Andermatt, Uri, Switzerland.

1845. *Hypudaeus nivicola* Schinz, Syn. Mamm. *2:* 236. "Highest Swiss Alps."

1853. *Hypudaeus petrophilus* Wagner, Münch. Gel. Anz., No. 38, 307. Oberstdorf, near Sonthofen, Allgau, Bavaria, Germany.

Range: France (Haute-Savoie), Switzerland, Germany, Austria, Northern Italy.

Microtus nivalis lebruni Crespon, 1844

1844. *Arvicola lebrunii* Crespon, Faune Méridionale, *1:* 77. Near Nimes, Gard, 180 m., France.

Microtus nivalis leucurus Gerbe, 1852

1852. *Arvicola leucurus* Gerbe, Rev. Mag. Zool. 2nd ser. *4:* 260. Barcelonette, Basses-Alpes, France.

Microtus nivalis aquitanius Miller, 1908

1908. *Microtus nivalis aquitanius* Miller, Ann. Mag. N.H. *1:* 99. Near L'Hospitalet, Ariège, 4,800 ft., France. Range: Pyrences.

Microtus nivalis ulpius Miller, 1908

1908. *Microtus ulpius* Miller, Ann. Mag. N.H. *1:* 100. Hatszeg, Hunyad 2,000 ft., Rumanian Transylvania.

Microtus nivalis pontius Miller, 1908

1908. *Microtus pontius* Miller, Ann. Mag. N.H. *1:* 102. Twenty-five miles north of Baibort, 7,000 ft., Asia Minor.

Microtus nivalis hermonis Miller, 1908

1908. *Microtus hermonis* Miller, Ann. Mag. N.H. *1:* 103. Mt. Hermon, Palestine.

MICROTUS NIVALIS IGHESICUS Shidlovsky, 1919

1919. *Microtus (Chionomys) nivalis ighesicus* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *5:* 36. Eastern part of Central Caucasus chain and mountains of Daghestan. Kuzentzov lists it from mountains of Daghestan.

1919. *Microtus (Chionomys) nivalis ighesicus gotshobi* Shidlovsky, *loc. cit.* 37. Village Gochob, district of Gunib, Caucasus.

MICROTUS NIVALIS TRIALETICUS Shidlovsky, 1919

1919. *Microtus (Chionomys) nivalis trialeticus* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *5:* 37. Kisil-kilisa, Asheala, Kuembat, Caucasus.

MICROTUS NIVALIS SATUNINI Shidlovsky, 1919

1919. *Microtus (Chionomys) nivalis satunini* Shidlovsky, Tiflis Bull. Terr. Exper. Stat. *5:* 37. Forestland in vicinity of Mirzik Village, near Surnabad (Shakh-Dag Range), 6,000 ft., Caucasus.

MICROTUS NIVALIS MALYI Bolkay, 1925

1925. *Microtus nivalis malyi* Bolkay, Nov. Mus. Sarajevoensis, *1:* 10. Tisovica Valley, Prenj Mountains, about 1,400 m., Hercegovina, Yugoslavia.

MICROTUS NIVALIS ABULENSIS Agacino, 1936

1936. *Microtus (Chionomys) nivalis abulensis* Agacino, Bol. Real. Soc. Esp. H.N. *36:* 151. Solosancho, Province of Avila, Spain.

MICROTUS NIVALIS OLYMPIUS Neuhäuser, 1936

1936. *Microtus (Chionomys) nivalis olympius* Neuhäuser, Z. Säuget. *11:* 159. Olymp, Vilayet Brussa, Asia Minor.

MICROTUS NIVALIS DEMENTIEVI Heptner, 1939

1939. *Microtus (Chionomys) nivalis dementievi* Heptner, Ann. Mag. N.H. *4:* 192. Mt. Dushak, Kopet-Dag Mountains, South-Western Russian Turkestan.

MICROTUS NIVALIS WAGNERI Martino, 1940

1940. *Chionomys nivalis wagneri* Martino, Ann. Mag. N.H. *5:* 496. Zgornja Krma, Triglav Mountains, Western Slovenia, Yugoslavia.

MICROTUS NIVALIS RADNENSIS Ehik, 1942

1942. *Microtus (Chionomys) radnensis* Ehik, Ann. H.N. Mus. Hung. Zool. *35:* 23. Mosolygo Lake, Radna Mountains, Hungary.

Microtus socialis Pallas, 1773 Social Vole

Approximate distribution of species: Ukraine, Crimea, Caucasus, Russian Turkestan Turkmenia, Lower Ural, Kazakstan, Semirechyia), Zungaria (specimen in British Museum), Asia Minor, Persia, and according to Bate, Syria and Palestine.

Microtus socialis socialis Pallas, 1773

1773. *Mus socialis* Pallas, Reise Russ. Reichs, *2:* 705. "Grassy regions of desert by Ural River."
1777. *Mus astrachanensis* Erxleben, Syst. Nat. 403. Astrakhan, Russia.
1901. *Microtus parvus* Satunin, Mitt. Kaukas Mus. *1:* 117. Village of Divny, North-Eastern Caucasus. (Status *fide* Kuznetzov.)

Microtus socialis paradoxus Ognev & Heptner, 1928

1928. *Chilotus paradoxus* Ognev & Heptner, Zool. Anz. *75:* 263. Chuli, near Askabad, Kopet-Dag Mountains, South-Western Turkestan. Range includes Lake Van (Asia Minor), and Elburz Mountains, Persia (B.M.).

Microtus socialis schidlovskii Argyropulo, 1933

1933. *Microtus (Sumeriomys) colchicus schidlovskii* Argyropulo, Z. Säuget. *8:* 182. Leninakan district, 1,200 m., North-Eastern Armenia, Transcaucasia.

Microtus socialis gravesi Goodwin, 1934

1934. *Microtus gravesi* Goodwin, Amer. Mus. Nov. 742, 2. Tuz Bulak, alt. 600 ft. one hundred miles north of Kizil Arrat (Perovsk), Kazakstan.

Microtus socialis goriensis Argyropulo, 1935

1935. *Microtus socialis goriensis* Argyropulo, Z. Aserbeidschaner Inst. f. Microbiol. *5:* 229. *Nom. nov.* for *colchicus* Argyropulo, 1932.
1932. *Microtus (Microtus) colchicus* Argyropulo, J. Mamm. *13:* 268. Tamarascheni, Gori district, Georgia, Transcaucasia. Not of Shidlovsky, 1919.

Microtus (?) socialis hyrcania Goodwin, 1940

1940. *Microtus hyrcania* Goodwin, Amer. Mus. Nov. 1082, 8. Gouladah, between Astrabad and Bujnurd, 3,000 ft., North-Eastern Persia.

Microtus socialis binominatus Ellerman, 1941

1941. *Microtus socialis binominatus* Ellerman, Fam. Gen. Liv. Rodents, *2:* 607 (footnote). Replaces:
1924. *Chionomys socialis satunini* Ognev, Rodentia N. Caucasus, 37. Not of Shidlovksy, 1919. Near Tiflis, Transcaucasia.

Microtus irani Thomas, 1921 — Persian Vole

Approximate distribution of species: Persia, Iraq (near Baghdad, specimens in British Museum).

Microtus irani Thomas, 1921

1921. *Microtus irani* Thomas, J. Bombay N.H. Soc. *27:* 41. Bagh-i-Rezi, Shiraz, Persia.

Microtus guentheri Danford & Alston, 1880 Gunther's Vole

Approximate distribution of species: Greece; Asia Minor, Syria, Palestine; Libya the only North African Vole).

Microtus guentheri guentheri Danford & Alston, 1880

1880. *Arvicola guentheri* Danford & Alston, P.Z.S. 62. Marash, Asia Minor. Range: to Lebanon, Syria, and has been recorded from Palestine.

Microtus guentheri hartingi Barrett-Hamilton, 1903

1903. *Microtus* (*Mjcrotus*) *hartingi* Barrett-Hamilton, Ann. Mag. N.H. *11:* 307. Larissa, Thessaly, Greece.

Microtus guentheri lydius Blackler, 1916

1916. *Microtus lydius* Blackler, Ann. Mag. N.H. *17:* 426. Smyrna, Western Asia Minor.

Microtus guentheri philistinus Thomas, 1917

1917. *Microtus philistinus* Thomas, Ann. Mag. N.H. *19:* 450. Ekron, south-east of Jaffa, Palestine.

Microtus guentheri musitersi Hinton, 1926

1926. *Microtus musitersi* Hinton Ann. Mag. N.H. *18:* 305. Merg, Cyrenaica, 300 m., Libya.

Microtus guentheri shevkeli Neuhäuser, 1936

1936. *Microtus* (*Sumeriomys*) *güntheri shevketi* Neuhäuser, Z. Säuget. *11:* 160. Tarsus, Vilayet Adana, Asia Minor.

Microtus arvalis Pallas, 1779 Common Vole

Approximate distribution of species: France, Belgium, Holland, Spain, Northern Italy, Switzerland, Germany, Denmark, Poland, Hungary, Yugoslavia, Czechoslovakia, Rumania, Greece; most of Russia (as far north as Central Karelia, southern parts Archangel and Kirov Provinces), south to Ukraine and Caucasus; Urals and Western Siberia, to Transbaikalia, Kazakstan, Semirechyia; Mongolia, Chinese Turkestan, Manchuria; Asia Minor, Persia.

Microtus arvalis arvalis Pallas, 1779

1779. *Mus arvalis* Pallas, Nov. Spec. Quad. Glir. Ord. 78. Germany.
1798. *Microtus terrestris* Schrank, Fauna Boica, *1:* 72. For status, see Miller, 1896, N. Amer. Fauna, No. 12: 14.
1801. *Mus arvalis albus* Bechstein, Gemeinn. Nat. Deutsch, 2nd ed. *1:* 998. Thuringia, Germany.
1822. *Arvicola vulgaris* Desmarest, Mammalogie, *2:* 282.
1840. *Arvicola arvensis* Schinz, Europ. Fauna, *1:* 60. Substitute for *arvalis*.
?) 1845. *Arvicola arvalis* var. *ater* de Sélys Longchamps, Atti della sesta Riun. degli Sci. Ital., Torino, *1844:* 321, *nom. nud.*
?) 1847. *Arvicola cunicularius* Ray, Rev. Zool. 312. Riceys, Aube, France.

1853. *Arvicola campestris* Blasius, Gelehrte Anz. München, *37:* 106. Brunswick, Germany.
1905. *Arvicola arvalis galliardi* Fatio, Arch. Sci. Phys. Nat. Genève, *4*, 19: 197. Bulle, Fribourg, Switzerland.
1905. *Arvicola arvalis* form *variabilis* Rörig & Börner, Arbeiten aus der kaiserlichen Biol. Anstalt für Land und Forstwirtschaft, *5*, 2: 73. Wahlstatt, near Liegnitz, Silesia, Germany.
1905. *Arvicola arvalis* form *contigua* Rörig & Börner, *loc. cit.* 76. Rothenburg, Silesia.
1905. *Arvicola arvalis* form *assimilis* Rörig & Börner, *loc. cit.* 77. Darmstadt, Hessen; Germany.
1905. *Arvicola arvalis* form *depressa* Rörig & Börner, *loc. cit.* 88. Bautzen, Saxony, Germany.
1905. *Arvicola arvalis* form *simplex* Rörig & Börner, *loc. cit.* Pl. V. Gransee, Brandenburg, Germany.
1905. *Arvicola arvalis* form *principalis* Rörig & Börner, *loc. cit.* Pl. V. Burghessler, near Kösen, Thuringia, Germany.
1912. "1803. *Lemmus fulvus* Geoffroy, Catal. Mammif. du Mus. Nat. d'Hist. Nat., Paris, 187. France", Miller, Cat. Mamm. Western Europe, 683, in synonymy. According to Sherborn, this name was never published.

Range: Belgium, France, Germany, Bohemia, Switzerland, Northern Italy, Hungary, Yugoslavia, Poland, Greece.

MICROTUS ARVALIS OBSCURUS Eversmann, 1841

1841. *Hypudaeus obscurus* Eversmann, Mem. Univ. Kazan, 156. (*M.V.*) Reference from Sherborn. Altai Mountains, Siberia.

Range: Semirechyia (specimens in B.M.), Zungaria, Chinese Turkestan, Manchuria, Tarbagatai Mountains. (I doubt if the form called *M. obscurus* by G. Allen, from Mongolia, is the same as *M. a. obscurus* in B.M. material, and apparently as understood by Russian authors. Possibly Allen's form represents *M. middendorffi.*)

MICROTUS ARVALIS INCERTUS de Sélys Longchamps, 1841

1841. *Arvicola incertus* de Sélys Longchamps, Atti della Sec. Riun. degli Sci. Ital. Torino, *1840:* 225. Near summit of St. Gothard Pass, Uri, Switzerland.
1869. *Arvicola arvalis* var. *fulva* Fatio, Faun. Vert. Suisse, *1:* 236. Near summit of Furka, Switzerland.
1905. *Arvicola arvalis* var. *flava* Fatio, Arch. Sci. Phys. Nat. Genève, *4*, 19: 195. Renaming of *fulva.*

Range: Switzerland (part), to Tyrol.

MICROTUS ARVALIS MONGOLICUS Radde, 1862

1862. *Arvicola mongolicus* Radde, Reise in dem Sud. von Ost. Sibirien, 194. Near Tarei-nor, Transbaikalia.
(?) 1901. *Microtus (Arvicola) poljakovi* Kastschenko, Ann. Mus. St. Pétersb. *6:* 31. Apple Mountains, Dauuria, Transbaikalia. Regarded by G. Allen as a distinct species from Mongolia, occurring with the last, similar but slightly smaller; not listed as valid by Kuznetzov, 1944. Vinogradov & Obolensky "incline to make this a synonym of *mongolicus*" (G. Allen). Russian authors give *mongolicus* specific rank, but their characters are not convincing.

Range: Transbaikalia, Mongolia, into Manchuria, not occurring there with *obscurus.*

MICROTUS ARVALIS MYSTACINUS de Filippi, 1865

1865. *Arvicola mystacinus* de Filippi, Viagg. Persia, 255. Persia. Co-types in B.M. from Lar Valley, Northern Persia.

MICROTUS ARVALIS DUPLICATUS Rörig & Börner, 1905

1905. *Arvicola arvalis* forma *duplicatus* Rörig & Börner, Arbeiten aus der Kaiserlich Biol. Anstalt f. Land und Forstwirtschaft, *5*, 2: pl. 5. Rossiten, East Prussia, Germany. Ranges to Estonia, and Western, Central, Northern Russia.

MICROTUS ARVALIS LEVIS Miller, 1908

1908. *Microtus levis* Miller, Ann. Mag. N.H. *1:* 197. Gageni, Prahova, at foot of Carpathians, north-west of Bucharest, Rumania. Range: Rumania, Bulgaria, Yugoslavia (in part), Hungary, North-Eastern Italy.

MICROTUS ARVALIS MERIDIANUS Miller, 1908

1908. *Microtus arvalis meridianus* Miller, Ann. Mag. N.H. *1:* 197. Near Biarritz, Basses-Pyrénées, France.

MICROTUS ARVALIS ASTURIANUS Miller, 1908

1908. *Microtus asturianus* Miller, Ann. Mag. N.H. *1:* 198. Pajares, Leon, Spain.

MICROTUS (?) ARVALIS ANGULARIS Miller, 1908

1908. *Microtus angularis* Miller, Ann. Mag. N.H. *1:* 198. Transylvania (probably near Hatszeg, Hunyad).

MICROTUS ARVALIS SARNIUS Miller, 1909

1909. *Microtus sarnius* Miller, Ann. Mag. N.H. *3:* 420. St. Martins, Guernsey, Channel Islands.

MICROTUS ARVALIS CALYPSUS Montagu, 1923

1923. *Microtus arvalis calypsus* Montagu, P.Z.S. 869. Nova Varos, Serbia, Yugoslavia.

MICROTUS ARVALIS ROSSIAEMERIDIONALIS Ognev, 1924

1924. *Microtus arvalis rossiaemeridionalis* Ognev, Rodentia N. Caucasus, 27. Novii Kurlak, Bobrov subdistrict of Voronej Govt., Russia. Range: Southern Russia, except Ciscaucasia.

MICROTUS ARVALIS MACROCRANIUS Ognev, 1924

1924. *Microtus arvalis macrocranius* Ognev, Rodentia N. Caucasus, 27. Kabarda Plain, Northern Caucasus. Range includes Ciscaucasia.

1929. *Microtus arvalis macrocranius* natio *ghalgai* Krassovsky, 1929, Ingushsk Inst. Sci. Res. Vladikavkaz, 81. (*M.V.*)

MICROTUS ARVALIS TRANSCAUCASICUS Ognev, 1924

1924. *Microtus arvalis transcaucasicus* Ognev, Rodentia N. Caucasus, 30. Borchalinsk subdistrict, Tiflis Govt., Caucasus.

MICROTUS (?) ARVALIS BREVIROSTRIS Ognev, 1924

1924. *Microtus brevirostris* Ognev, Rodentia N. Caucasus, 32. Surroundings of Vladikawkaz (Ordzhonikidze), Caucasus. Vinogradov thought it probably belongs to *arvalis*. It is not, apparently, listed in Kuznetzov.

MICROTUS ARVALIS HAWELKAE Bolkay, 1925

1925. *Microtus arvalis hawelkae* Bolkay, Nov. Mus. Sarajevoensis, *1:* 9. Lebrsnik Mountains, near Gacko, Hercegovina, Yugoslavia.

MICROTUS ARVALIS BRAUNERI Martino, 1926

1926. *Microtus arvalis brauneri* Martino, Ann. Mus. Nat. Hung. *23:* 165. Kraljevo, Serbia, Yugoslavia.

MICROTUS ARVALIS GUDAURICUS Ognev, 1929

1929. *Microtus arvalis gudauricus* Ognev, Ber. Microbiol. Staats Ins. No. 9, 164. Near Gudaur, Caucasus.

MICROTUS ARVALIS TRANSURALENSIS Serebrennikov, 1929

1929. *Microtus arvalis transuralensis* Serebrennikov, Ann. Mus. Zool. Leningrad, *30:* 257. Pokrovka, Chelyabinsk steppes, Transuralia, Western Siberia. Ranges to Northern Kazakstan.

MICROTUS ARVALIS CIMBRICUS Stein, 1931

1931. *Microtus arvalis cimbricus* Stein, Mitt. Zool. Mus. Berlin, *17:* 287. Wotersen Estate, near Roseberg, Lauenberg district, Schleswig-Holstein, Germany.

MICROTUS ARVALIS INCOGNITUS Stein, 1931

1931. *Microtus arvalis incognitus* Stein, Mitt. Zool. Mus. Berlin, *17:* 289. Gimmel, Oels district, Silesia, Czechoslovakia.

MICROTUS ARVALIS RHODOPENSIS Heinrich, 1936

1936. *Microtus arvalis rhodopensis* Heinrich, Bull. Inst. R.H.N. Sophia, *9:* 48. Village Tschepelare, Central Rhodope, 1,200 m., Bulgaria.

MICROTUS ARVALIS MUHLISI Neuhäuser, 1936

1936. *Microtus arvalis muhlisi* Neuhäuser, Z. Säuget. *11:* 194. Bartin, Asia Minor.

MICROTUS ARVALIS RELICTUS Neuhäuser, 1936

1936. *Microtus arvalis relictus* Neuhäuser, Z. Säuget. *11:* 195. Inevi, Asia Minor.

MICROTUS ARVALIS KHORKOUTENSIS Goodwin, 1940

1940. *Microtus arvalis khorkoutensis* Goodwin, Amer. Mus. Nov. 1082, 8. Forest of Khorkout Range, near Dasht, district of Bujnurd, 5,000 ft., North-Eastern Persia.

MICROTUS ARVALIS BAICALENSIS Fetisov, 1941

1941. *Microtus arvalis baicalensis* Fetisov, Arch. Mus. Zool. Moscow, *6:* 75, 76. Mt. Ordak, Djidinsky district, Burat Mongolsky Republic, Transbaikalia.

MICROTUS ARVALIS IPHIGENIAE Heptner, 1946

1946. *Microtus arvalis iphigeniae* Heptner, C.R. Acad. Sci. Moscow, n.s. *52*, 2: 183. Alabatch, Romana-Koche, Crimea, Southern Russia.

Microtus transcaspicus Satunin, 1905 Transcaspian Vole

Approximate distribution of species: Russian Turkestan (Turkmenia, Usbekistan, Tadjikistan, and Semirechyia). Afghanistan (specimens in British Museum).

Kuznetzov does not agree with Vinogradov that the Semirechyia form *ilaeus* should be referred to this species, and puts it with *arvalis*. This is surely erroneous, as *ilaeus* occurs with a form of *arvalis* in Semirechyia; we have many specimens for both forms, from Djarkent. Moreover, the majority of our specimens of *ilaeus*, if compared with the characters given in Kuznetzov's key, agree with *transcaspicus*.

MICROTUS TRANSCASPICUS TRANSCASPICUS Satunin, 1905

1905. *Microtus transcaspicus* Satunin, Verz. Säug. Transkaspiens (Russ.), *25*: 30. Tschuli Gorge, near Ashabad, Transcaspia. Range includes Shibar Pass, Afghanistan.

MICROTUS TRANSCASPICUS ILAEUS Thomas, 1912

1912. *Microtus ilaeus* Thomas, Ann. Mag. N.H. *9*: 348. On banks of River Ussek, Djarkent, Semirechyia (Eastern Russian Turkestan).

Microtus montebelli Milne-Edwards, 1872

Approximate distribution of species: Japan.

MICROTUS MONTEBELLI MONTEBELLI Milne-Edwards, 1872

1872. *Arvicola montebelli* Milne-Edwards, Rech. Mamm. 285. Fusiyama, Japan.

1904. *Arvicola hatanezumi* Sasaki, Bull. Coll. Agric. Tokyo, *6*: 51. (*M.T.*) Pref. Ibaraki, Hondo, Japan.

Range: Hondo, Kiushiu in Japan.

MICROTUS MONTEBELLI BREVICORPUS Tokuda, 1933

1933. *Microtus montebelli brevicorpus* Tokuda, Annot. Zool. Jap. *14*: 236. Sado Island, Japan.

Microtus orcadensis Millais, 1904 Orkney Vole

Approximate distribution of species: Orkney Islands, off Scotland.

MICROTUS ORCADENSIS ORCADENSIS Millais, 1904

1904. *Microtus orcadensis* Millais, Zoologist, *8*: 244. Pomona Island, South Orkney Islands.

MICROTUS ORCADENSIS SANDAYENSIS Millais, 1905

1905. *Microtus orcadensis sandayensis* Millais, Mamm. Gt. Britain & Ireland, *2*: 280. Sanday Island, North Orkney Islands.

Microtus orcadensis westrae Miller, 1908
1908. *Microtus sandayensis westrae* Miller, Ann. Mag. N.H. *1:* 199. Puriswall, Westray Island, North Orkney Islands.

Microtus orcadensis ronaldshaiensis Hinton, 1913
1913. *Microtus orcadensis ronaldshaiensis* Hinton, Ann. Mag. N.H. *12:* 457. South Ronaldshay Island, Orkney Islands.

Microtus orcadensis rousaiensis Hinton, 1913
1913. *Microtus orcadensis rousaiensis* Hinton, Ann. Mag. N.H. *12:* 460. Rousay Island, South Orkney Islands.

Microtus cabrerae Thomas, 1906 Cabrera's Vole

Approximate distribution of species: Spain.

Microtus cabrerae cabrerae Thomas, 1906
1906. *Microtus cabrerae* Thomas, Ann. Mag. N.H. *17:* 576. Rascafria, Sierra de Guadarrama, Province of Madrid, Spain.

Microtus (?) cabrerae dentatus Miller, 1910
1910. *Microtus dentatus* Miller, Ann. Mag. N.H. *6:* 459. Molinicos, Sierra de Segura, Albacete, Spain.

Microtus igmanensis Bolkay, 1929

Approximate distribution of species: Yugoslavia. Known, apparently, by one specimen only.

Microtus igmanensis Bolkay, 1929
1929. *Microtus igmanensis* Bolkay, Nov. Mus. Sarajevoensis, *8:* 1. Veliko Polje, Igman Mountains, 1,214 m., Bosnia, Yugoslavia.

Apparently a large member of the *M. arvalis* group superficially similar to *M. cabrerae* and *M. orcadensis*. Nasals apparently shorter than either.

Microtus ungurensis Kastschenko, 1912

Approximate distribution of species: Transbaikalia, to Amur region, as far east as River Zeya, Eastern Siberia.

Microtus ungurensis Kastschenko, 1912
1912. *Microtus michnoi* var. *ungurensis* Kastschenko, Annu. Mus. Zool. Acad. St. Pétersb. *17:* 418. River Ungur, near Makoveevo, about 50 km. south-east of Chita, Transbaikalia.

Microtus fortis Büchner, 1889 Reed Vole

Approximate distribution of species, as here understood: Transbaikalia, Amur, Ussuri region to Manchuria, Korea, Mongolia; Shensi, Kiangsu and Chekiang in China.

MICROTUS FORTIS FORTIS Büchner, 1889

1889. *Microtus fortis* Büchner, Wiss. Res. Przewalski Cent. Asien. Reisen, Zool. Th. *1*, Säugeth. 99. Valley of north loop of Hwangho River, border of Ordos Desert, Southern Mongolia.

1911. *Microtus calamorum superus* Thomas, Abstr. P.Z.S. 27; P.Z.S. 691. Thirty miles south of Fenghsiangfu, Shensi, China.

MICROTUS FORTIS CALAMORUM Thomas, 1902

1902. *Microtus calamorum* Thomas, Ann. Mag. N.H. *10:* 167. North bank of Lower Yangtsekiang River, near Nanking, Kiangsu, China. Range includes Chekiang.

MICROTUS FORTIS MICHNOI Kastschenko, 1910

1910. *Microtus michnoi* Kastschenko, Ann. Mus. Zool. Ac. Sci. St. Pétersb. *15:* 288. Near Troitzko-Savsk, Transbaikalia.

MICROTUS FORTIS PELLICEUS Thomas, 1911

1911. *Microtus pelliceus* Thomas, Ann. Mag. N.H. *7:* 383. Ussuri River, Eastern Siberia. Range: Amur, Ussuri districts, to Korea.

1930. *Microtus dolichocephalus* Mori, Annot. Z. Jap. *12:* 420. Chengchiatun, Central Manchuria.

Microtus clarkei Hinton, 1923 Clarke's Vole

Approximate distribution of species: Yunnan, and Northern Burma.

MICROTUS CLARKEI Hinton, 1923

1923. *Microtus clarkei* Hinton, Ann. Mag. N.H. *11:* 158. Kiukiang-Salween divide, 28° N., 11,000 ft., Yunnan, China. Range: to Adung Valley, Northern Burma.

Microtus kikuchii Kuroda, 1920

Approximate distribution of species: Formosa.

MICROTUS KIKUCHII Kuroda, 1920

1920. *Microtus kikuchii* Kuroda, Zool. Mag. Tokyo, *32:* 36. Mt. Morrison, 10,000 ft., Formosa.

Microtus agrestis Linnaeus, 1761 Field Vole

Approximate distribution of species: Britain, France, Spain, Portugal, Germany, Switzerland, Northern Italy, Norway, Sweden, Holland, Denmark, Poland, Hungary, Yugoslavia, Rumania, Finland, Estonia, Russia from Arctic south to Ukraine, Voronej Province, and Southern Urals, Western Siberia (from tundra to Altai Mountains and forest-steppe districts), Yenesei basin, Baikal area, Yakutia; Mongolia, Chinese Turkestan. Doubtless also in much of North America.

Microtus agrestis agrestis Linnaeus, 1761

1761. *Mus agrestis* Linnaeus, Faun. Suec. 11. Upsala, Sweden.
1766. *Mus gregarius* Linnaeus, Syst. Nat. 12th ed. 84. Germany and Sweden.
1792. *Mus arvalis nigricans* Kerr, Anim. Kingd. 239. Renaming of *agrestis*.
1844. *Lemmus insularis* Nilsson, Ofvers. K. Vetensk Akad. Forh. Stockholm, *1:* 34. Ostgötha, Skärgard, Sweden.

Range: Norway, Sweden, Finland, Russia.

Microtus agrestis hirtus Bellamy, 1839

1839. *Arvicola hirta* Bellamy, N.H. South Devon, 373. Yealmpton, Devonshire, England.
1847. *Arvicola britannicus* de Sélys Longchamps, Rev. Zool. 307. England.

Range: England, Southern Scotland.

Microtus agrestis neglectus Jenyns, 1841

1841. *Arvicola neglectus* Jenyns, Ann. Mag. N.H. *7:* 270. Moors near Megarnie Castle, Perthshire, Scotland.

Microtus agrestis bailloni de Sélys Longchamps, 1841

1841. *Arvicola bailloni* de Sélys Longchamps, Atti della Sec. Riun. degli Sci. Ital. Torino, *1840:* 225. Abbeville, Somme, France.
1845. *Arvicola intermedia* Bonaparte, Atti della Sesta Riun. degli Sci. Ital. Milano, *1844:* 350, *nom. nud.*

Range: Denmark, Germany, France, Poland.

Microtus agrestis levernedii Crespon, 1844

1844. *Arvicola levernedii* Crespon, Faune Méridionale, *1:* 73. Marshes between St. Gilles and Aigues-Mortes, Gard, France.
1869. *Arvicola agrestis* var. *nigra* Fatio, Faun. Vert. Suisse, *1:* 241. Engstlen, Berne, 1,750 m., Switzerland.
1900. *Arvicola agrestis rufa* Fatio, Rev. Suisse Zool. *8:* 472. Geneva, Switzerland.
1905. *Arvicola agrestis angustifrons* Fatio, Arch. Sci. Phys. Nat. Genève, *19:* 191. Meiringen, Berne, 650 m., Switzerland.
1905. *Arvicola agrestis latifrons* Fatio, *loc. cit.* 194. Geneva, Switzerland.

Range: France (Alps, and marshes on Mediterranean coast at mouth of Rhone), Switzerland, Northern Italy, Germany, Rumanian Transylvania.

Microtus agrestis rozianus Bocage, 1865

1865. *Arvicola rozianus* Bocage, Mem. Ac. Real. Sci. de Lisboa, *3*, 2: 7. Geria, near Coimbra, Portugal. Range includes Northern Spain.

Microtus agrestis exsul Miller, 1908

1908. *Microtus agrestis exsul* Miller, Ann. Mag. N.H. *1:* 201. North Uist, Hebrides, Scotland.
1909. *Microtus agrestis insul* Lydekker, Zool. Record, *45*, *1908*, Mamm.: 74. Misprint for *exsul*.

MICROTUS AGRESTIS MONGOL Thomas, 1911

1911. *Microtus agrestis mongol* Thomas, Ann. Mag. N.H. *8:* 759. Kemtchik Valley, Tannu-Ola Mountains, 4,200 ft., North-Western Mongolia. Range: into Siberia; Yenesei, Altai, etc.

MICROTUS AGRESTIS ARCTURUS Thomas, 1912

1912. *Microtus arcturus* Thomas, Ann. Mag. N.H.*9:* 398. Barlik Mountains, Zungaria, Chinese Central Asia.

MICROTUS AGRESTIS MIAL Barrett-Hamilton & Hinton, 1913

1913. *Microtus agrestis mial* Barrett-Hamilton & Hinton, Ann. Mag. N.H. *12:* 364. Island of Eigg, Inner Hebrides.

MICROTUS AGRESTIS LUCH Barrett-Hamilton & Hinton, 1913

1913. *Microtus agrestis luch* Barrett-Hamilton & Hinton, Ann. Mag. N.H. *12:* 366. Island of Muck, Inner Hebrides.

MICROTUS AGRESTIS MACGILLIVRAYI Barrett-Hamilton & Hinton, 1913

1913. *Microtus agrestis macgillivraii* Barrett-Hamilton & Hinton, Abstr. P.Z.S. 18; P.Z.S. 831. Island of Islay, Hebrides.

MICROTUS AGRESTIS FIONA Montagu, 1922

1922. *Microtus agrestis fiona* Montagu, P.Z.S. 940. Island of Gigha, Inner Hebrides.

MICROTUS AGRESTIS PUNCTUS Montagu, 1923

1923. *Microtus agrestis punctus* Montagu, P.Z.S. 868. Bled, Slovenia, Yugoslavia.

MICROTUS AGRESTIS ORIOECUS Cabrera, 1924

1924. *Microtus hirtus orioecus* Cabrera, Publ. Cien. Nat. Barcelona, *7*, 3: 8. Molins, Montseny, Prov. Gerona, Catalonia, Spain.

MICROTUS AGRESTIS PANNONICUS Ehik, 1924

1924. *Microtus agrestis pannonicus* Ehik, Ann. Mus. Nat. Hung. *21:* 76. Ormand, near Komarvos, Co. Zala, Hungary.

MICROTUS AGRESTIS TRIDENTINUS Dal Piaz, 1924

1924. *Microtus agrestis tridentinus* Dal Piaz, Studi Trent. *5*, 4: 10. Brenner, 1,400 m., Northern Italy.

MICROTUS AGRESTIS ESTIAE Reinwaldt, 1927

1927. *Microtus agrestis estiae* Reinwaldt, Act. Comm. Univ. Tartu, *12:* 13. Abruka Island, West Isles, Estonia.

MICROTUS AGRESTIS WETTSTEINI Ehik, 1928

1928. *Microtus agrestis wettsteini* Ehik, Ann. Mus. Nat. Hung. *25:* 197. Trixen, Karinthia, Hungary.

MICROTUS AGRESTIS OGNEVI Skalon, 1935

1935. *Microtus agrestis ognevi* Skalon, Izv. Gos. Protivochumn Inst. 11. (*M.T.*) Tserkovensk, River Tas (about 65° N.), North-Western Siberia.

Microtus agrestis argyropuli Ognev, 1944

1944. *Microtus agrestis argyropuli* Ognev, C.R. Acad. Sci. Moscow, n.s. *43*, 4: 179. Inzer Valley, Southern Ural Mountains.

Microtus oeconomus Pallas, 1776 Root Vole

Approximate distribution of species: Norway, Sweden, Germany, Holland, Hungary, Poland, Finland; Northern Russia and Siberia, east to Anadyr and Kamtchatka regions, south to Semirechyia, Northern Kazakstan, Voronej Province, Northern Ukraine; Mongolia, Tsaidam, China, States of Kansu and Shensi; Kurile Islands. Probably also in north-western North America.

Ognev, 1944, *C.R. Acad. Sci. l'U.R.S.S. 44*, 4: 166, states that in his opinion *Mus oeconomus* of Pallas is not *M. oeconomus* of later authors. He suggests that the name was based on a form of *M.* (*Stenocranius*) *gregalis* (which it antedates), and proposes to date *M. oeconomus* and *M. kamtschaticus* from Poljakov, ex Pallas, 1881. He also proposes to use *Microtus ratticeps* for the present species. But so far as I am able to trace, *M. gregalis* does not occur in Kamtchatka (in fact *oeconomus* as here understood is apparently the only *Microtus* that does so) and Pallas definitely stated that his *oeconomus* does occur there, whence (1779) he named a variety. Surely, therefore, if *oeconomus* is to be suppressed, *kamtschaticus* is the name for this species? Both Vinogradov and Kuznetzov use the name *oeconomus* for this species, and for the present I prefer to follow those authors.

Microtus oeconomus oeconomus Pallas, 1776

1776. *Mus oeconomus* Pallas, Reise Russ. *3:* 693. Type from Ischim Valley, Siberia, according to Kuznetzov. Range: south of Western and Central Siberia.

Microtus oeconomus kamtschaticus Pallas, 1779

1779. *Mus oeconomus* var. *kamtschaticus* Pallas, Nov. Spec. Quad. Glir. Ord. 233. Kamtchatka. Range: to Anadyr region, Eastern Siberia.

Microtus oeconomus ratticeps Keyserling & Blasius, 1841

1841. *Arvicola ratticeps* Keyserling & Blasius, Bull. Acad. Sci. Nat. St. Petersb. *9*, 2 and 3: 33. Weliki-Ustjug, Dvina River, North Central Russia.

1841. *Arvicola arenicola* de Sélys Longchamps, Bull. Acad. Royale des Sci. des Arts et Belles-Lettres de Bruxelles, *8*, 2: 236. Lisse, near Leiden, Holland.

1844. *Lemmus medius* Nilsson, Ofvers. K. Vetensk Akad. Forh. Stockholm, *1:* 34. Lapland, and mountains about Gudbrandsdal, Norway.

1899. *Arvicola* (*Microtus*) *ratticeps* var. *stimmingi* Nehring, S.B. Ges. Nat. Fr. Berlin, 58, 69. Near Brandenburg, Germany.

Range: Russia, Poland, Finland, Norway, Sweden, Germany, Hungary, Holland.

Microtus oeconomus ouralensis Poliakov, 1881

1881. *Arvicola ouralensis* Poliakov, Mem. Imp. Ac. Sci. St. Petersb. *39* appendix 2: 50 (*N.V.*) See Lataste, 1884, Ann. Mus. Civ. Stor. Nat. Genova, 277. Near Orenburg, Southern Urals. (Kuznetzov dates this form (*uralensis*) from Pallas, 1781, but gives no reference.)

MICROTUS OECONOMUS LIMNOPHILUS Büchner, 1889

1889. *Microtus limnophilus* Büchner, Wiss. Res. Przewalski Cent. Asien. Reis. Zool. Th. *1*, Säugeth. 110. Tsaidam (Ganssy and Ssyrtyn), Chinese Central Asia. Range: to Mongolia.

MICROTUS OECONOMUS TSHUKTSCHORUM Miller, 1899

1899. *Microtus tshuktschorum* Miller, Proc. Biol. Soc. Washington, *13:* 11. Plover Bay, Eastern Siberia. Ognev says it is a synonym of *kamtschaticus*.

MICROTUS OECONOMUS FLAVIVENTRIS Satunin, 1903

1903. *Microtus limnophilus flaviventris* Satunin, Ann. Mus. St. Pétersb. *7:* 577. Tschortentan Temple, Kansu, China.

1911. *Microtus malcolmi* Thomas, Abstr. P.Z.S. 5; P.Z.S. 174. South-east of Taochou (Taochow), Kansu, China.

Range: Kansu and Shensi, China.

MICROTUS OECONOMUS DAURICUS Kastschenko, 1910

1910. *Microtus oeconomus dauricus* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *15:* 293. Transbaikalia (Selo Tamira, Verkhne Udinsk). (Not listed by Kuznetzov, 1944.)

MICROTUS OECONOMUS KORENI G. Allen, 1914

1914. *Microtus koreni* G. Allen, Proc. New Engl. Zool. Club, *5:* 64. Nijni Kolmysk, near mouth of Kolyma River, North-Eastern Siberia. Range: basins of Kolyma and Indigirka Rivers, North-Eastern Siberia.

MICROTUS OECONOMUS UCHIDAE Kuroda, 1924

1924. *Microtus uchidae* Kuroda, J. Mamm. *5:* 118. Paramushir, North Kurile Islands.

MICROTUS OECONOMUS SUNTARICUS Dukelski, 1928

1928. *Microtus oeconomus suntaricus* Dukelski, Zool. Anz. *78:* 106. Near Suntar on River Vilyui, Yakutia, Siberia.

MICROTUS OECONOMUS MEHELYI Ehik, 1928

1928. *Microtus ratticeps mehelyi* Ehik, Ann. Mus. Nat. Hung. *25:* 197. Rajka, Hungary.

MICROTUS OECONOMUS SHANTARICUS Ognev, 1929

1929. *Microtus oeconomus shantaricus* Ognev, Zool. Anz. *83:* 85. Great Shantar Island, Eastern Siberia (Sea of Okhotsk).

MICROTUS OECONOMUS KJUSJURENSIS Koljuschev, 1935

1935. *Microtus oeconomus kjusjurensis* Koljuschev, Anim. Syst. Mus. Zool. Inst. Biol. Univ. Tomsk, *1:* 1. Village Kusur, 71° N., on right bank of Lena River, Siberia.

Microtus oeconomus hahlovi Skalon, 1935

1935. *Microtus oeconomus hahlovi* Skalon, Izv. Gos. Protivochumn Inst. *2:* 45 .(*N.V.*) River Tas, near latitude 65° N., North-Western Siberia.

Microtus oeconomus naumovi Stroganov, 1936

1936. *Microtus oeconomus naumovi* Stroganov, Abstr. Works Zool. Inst. Moscow Univ. *3:* 110–112. Tschirkova, Lower Khatanga River (about half-way between Yenesei and Lena), Northern Siberia. Kuznetzov says *kjusjurensis* is apparently identical with this; but it antedates *naumovi.*

Range: Middle and Lower Yenesei, and Khatanga Rivers.

Microtus oeconomus anikini Egorin, 1939

1939. *Microtus oeconomus anikini* Egorin, Trav. Inst. Sci. Biol. Tomsk, *6:* 147. Taiga of Western Siberia. Not listed as a valid form in Kuznetzov, 1944.

Microtus oeconomus petshorae Ognev, 1944

1944. *Microtus ratticeps petshorae* Ognev, C.R. Acad. Sci. Moscow, *44,* 4: 166. Nizhnyana Pesha (Cheskaja Bay), Northern Russia.

Microtus oeconomus altaicus Ognev, 1944

1944. *Microtus ratticeps altaicus* Ognev, C.R. Acad. Sci. Moscow, *44,* 4: 166. Lake Djulu-Kul, Altai, Siberia.

Microtus oeconomus montiumcaelestinum Ognev, 1944

1944. *Microtus ratticeps montium-caelestinum* Ognev, C.R. Acad. Sci. Moscow, *44,* 4: 167. Terectz Valley, Dzunger Alatau, Central Asia.

Microtus middendorffi Poliakov, 1881 Middendorff's Vole

Approximate distribution of species: Siberia, Northern Urals, northern parts of Rivers Ob, Tas, Yenesei, Khatanga, and Lena; Taimyr Peninsula.

Microtus middendorffi middendorffi Poliakov, 1881

1881. *Arvicola middendorffii* Poliakov, Mem. Imp. Acad. Sci. St. Petersb. *39* appendix 2: 70. (*N.V.*) See Lataste, 1884, Ann. Mus. Civ. Stor. Nat. Genova, *20:* 289. Taimour (Taimyr) Peninsula, Northern Siberia.

1853. *Arvicola obscurus* Middendorf, Reise. Sibir. *2:* 109. Not of Eversmann, 1841.

Microtus middendorffi tasensis Skalon, 1935

1935. *Microtus middendorffi tasensis* Skalon, Izv. Gos. Protivochumn Inst. *2:* 46 (*N.V.*) River Tas, North-Western Siberia.

Microtus middendorffi uralensis Skalon, 1935, Izv. Gos. Protivochumn. Inst. *2:* 49 (*N.V.*), Siberian Urals, is preoccupied (not of Poliakoff, 1881), and is renamed *Microtus middendorffi ryphaeus* by Heptner, 1948, C.R. Acad. Sci. Moscow, *60:* 710.

Microtus hyperboreus Vinogradov, 1934

Approximate distribution of species: Northern Siberia, basin of Yana River, Verhoiansk Range, and Taimyr Peninsula.

MICROTUS HYPERBOREUS HYPERBOREUS Vinogradov, 1934

1934. *Microtus hyperboreus* Vinogradov, Trav. L'Inst. Zool. Acad. Sci. *1933:* 1. (N.E.) Verhoiansk Mountains, Eastern Siberia.

MICROTUS HYPERBOREUS SWEREVI Skalon, 1935

1935. *Microtus hyperboreus swerevi* Skalon, Izv. Gos. Protivochumn Inst. *2:* 49 (*N.E.*). River Dudinta, tributary of the Pyasina, Taimyr Peninsula, Northern Siberia.

Microtus millicens Thomas, 1911 North Szechuan Vole

Approximate distribution of species: Szechuan, China.

MICROTUS MILLICENS Thomas, 1911

1911. *Microtus millicens* Thomas, Abstr. P.Z.S. 49; P.Z.S. *1912:* 138. Weichoe, Siho River, Western Szechuan, 12,000 ft., China. (About 60 miles north-west of Chengtu: G. Allen.)

The status of the following names, all of which have been associated with this genus, is not sure.

Mus micruros Gmelin, 1774, Reise Russl. *3:* 500. Northern Persia. This very early name was made a possible synonym of *Microtus arvalis mystacinus* by Trouessart. It is best regarded as unidentifiable. The figure in the original description is fantastic. The name could equally well apply to any of the short-tailed Muridae known to occur in Persia, for instance, *Pitymys subterraneus*, *Microtus socialis*, *Microtus arvalis*, *Microtus irani*, or *Cricetulus migratorius*, and antedates all of them.

Mus saxatilis Pallas, 1779, Nov. Spec. Quad. Glir. Ord. 255. Transbaikal region, Siberia. This name has been associated with the present genus, and if rightly allocated here, measurements in the description suggest that this might prove the prior name for *Microtus fortis*.

Hypudaeus syriacus Brants, 1827, Het Gesl. d. Muizen, 92. Syria. Aharoni made this a subspecies of *Microtus nivalis* (!) which it antedates by fifteen years. According to Bate, 1945, Ann. Mag. N.H. *12:* 151, it is by no means certain that *syriacus* was based on a form of *M. nivalis*.

Arvicola maximowiczii Schrenk, 1859, Saugeth. Amurland, 140. Amurland, Eastern Siberia. *Microtus maximowiczii* is very possibly a valid species characterized by normal dentition (like that of *M. arvalis*), combined with an unusually short tail, only 23 per cent. of head and body length (type), as in the South-West Asiatic *M. guentheri*. Only it might be based on a *Stenocranius*, and the description of the skull is not sufficient to make it possible to allocate the species.

Microtus tsaidamensis Satunin, 1903, Ann. Mus. Zool. St. Pétersb. *7:* 579. Tossonor, Tsaidam, Chinese Central Asia.

Microtus dinnikii Satunin, 1903 *nom. nud.*?, Mamm. Caucasus, 59. Surroundings of Maikop, Caucasus.

Microtus mirhanreini Schaefer, 1935, Arch. Naturg. *4:* 560. Ehik, 1949, Sborn. Nar. Mus. Praha, *5B*, Zool. 2: 67. Muran Cave, Belanske Tatry, 1650m., Czechoslovakia. Range: High Tatra, Czechoslovakia.

Microtus (*Lasiopodomys*) *vinogradovi* Fetissov, 1936, Izv. Gos. Protivochumn Inst. *3:* 125 (*N.V.*). Area south of Lake Baikal and on River Dzhida, Russian Asia (Kuznetzov).

Microtus xerophylus Skalon, 1936, Izr. Gos. Protivochumn Inst. *4:* 177 (*N.V.*). Kuznetzov says it was described by Skalon from Transbaikalia, but its diagnosis is so vague it is still difficult to judge its systematic position. Vinogradov & Argyropulo (1941) make it a synonym of *M. mongolicus*.

Subgenus *PROEDROMYS* Thomas, 1911

Microtus bedfordi Thomas, 1911 Duke of Bedford's Vole

Approximate distribution of species: Kansu, China. Known by one specimen.

Microtus bedfordi Thomas, 1911

1911. *Proedromys bedfordi* Thomas, Abstr. P.Z.S. 4; P.Z.S. 177. Sixty miles south-east of Minchow, Kansu, China.

Subgenus *LASIOPODOMYS* Lataste, 1887

Microtus brandti Radde, 1861 Brandt's Vole

Approximate distribution of species: Transbaikalia, Mongolia, Manchuria.

Microtus brandti Radde, 1861

1861. *Arvicola* (*Hypudaeus*) *brandtii* Radde, Mél. Biol. Acad. St. Petersb. *3:* 683. Near Tarei-nor, North-Eastern Mongolia.

(?) 1912. *Microtus brandti aga* Kastschenko, Ann. Mus. Zool. Acad. Sci. St. Pétersb. *17:* 418. Aginsk Steppe, near Village Aga, Transbaikalia.

1913. *Microtus warringtoni* Miller, Smiths. Misc. Coll. *60*, 28: 1. Tabool, 100 miles north of Kalgan, 4,000 ft., Inner Mongolia.

Range: Transbaikalia, Mongolia, Manchuria.

Microtus mandarinus Milne-Edwards, 1871 Mandarin Vole

Approximate distribution of species: China, states of Shansi, Shensi, Chihli. Korea.

Microtus mandarinus mandarinus Milne-Edwards, 1871

1871. *Arvicola mandarinus* Milne-Edwards, Rech. Mamm. 129, pl. 12, fig. 4; pl. 13, figs. 4–4d. Probably from Saratsi, Northern Shansi, China.

1896. *Microtus mandrianus* Miller, N. Amer. Fauna, 12, 57. Accidental renaming of *mandarinus*.

1911. *Microtus pullus* Miller, Proc. Biol. Soc. Washington, *24:* 53. Chiao Cheng Shan, 90 miles west of Taiyuenfu, Shansi, 7,000 ft., China.

Range: Shensi and Shansi, China.

MICROTUS MANDARINUS JOHANNES Thomas, 1910

1910. *Microtus johannes* Thomas, Abstr. P.Z.S. 26; P.Z.S. 637. Twelve miles north-west of Kolanchow, Shansi, 7,000 ft., China.

MICROTUS MANDARINUS FAECEUS G. Allen, 1924

1924. *Microtus mandarinus faeceus* G. Allen, Amer. Mus. Nov. 133, 8. One hundred miles north-east of Pekin, Chihli, China.

1939. *Microtus jeholensis* Mori, Rept. First Sci. Exped. Manchoukuo, *5*, 2, 4: 68, pl. 9. Changshanyu, Jehol, North-Eastern China.

MICROTUS MANDARINUS KISHIDAI Mori, 1930

1930. *Microtus kishidai* Mori, J. Chosen N.H. Soc. No. 10; 53. Seiryo-Ri, near Keijo, Korea. Status *fide* Tokuda.

Subgenus *STENOCRANIUS* Kastschenko, 1901

Microtus gregalis Pallas, 1779 Narrow-skulled Vole

Approximate distribution of species: widely distributed in Russian Asia, west to east shore White Sea (European Russia), eastwards to Behring Straits; Yakutsk, Transbaikalia, Altai Mountains, Western Siberia, Kazakstan, and mountains of Eastern Russian Turkestan. Chinese Turkestan, Mongolia, Manchuria.

MICROTUS GREGALIS GREGALIS Pallas, 1779

1779. *Mus gregalis* Pallas, Nov. Spec. Quad. Glir. Ord. 238. Area east of River Chuluim, Siberia (according to Kuznetzov).

1881. *Arvicola arvalis* var. *slowzowi* Poliakoff, Mem. Acad. Sci. St. Petersb. *39:* 79. Omsk, Siberia. (*N.V.*)

Range: Transural district, Northern Kazakstan, Western Siberia, to Lake Baikal.

MICROTUS GREGALIS EVERSMANNI Poliakov, 1881

1881. *Arvicola eversmanni* Poliakov, Mem. Imp. Ac. Sci. St. Petersb. *39* appendix 2: 63 (*N.V.*) See Lataste, 1884, Ann. Mus. Civ. Stor. Nat. Genova, *20:* 285. Uimon, Siberian Altai.

1889. *Microtus tianschanicus* Buchner, Wiss. Res. Przewalski Cent. Asien Reisen, Zool. Th. *1*, Saugeth.: 107. Tianshan Mountains.

Range: Altai, Tarbagatai, Tianshan Mountains.

MICROTUS GREGALIS NORDENSKIOLDI Poliakov, 1881

1881. *Arvicola nordenskioldii* Poliakov, Mem. Imp. Ac. Sci. St. Petersb. *39* appendix 2: 72 (*N.V.*). See Lataste, 1884, Ann. Mus. Civ. Stor. Nat. Genova, *20:* 290. Taimyr (Taimour) Peninsula, Northern Siberia.

MICROTUS GREGALIS RADDEI Poliakov, 1881

1881. *Arvicola raddei* Poliakov, Mem. Imp. Ac. Sci. St. Petersb. *39* appendix 2: 87. (*N.V.*) See Lataste, 1884, Ann. Mus. Civ. Stor. Nat. Genova, *20:* 299. Tareinor, near Transbaikalian-Mongolian border.

1924. *Stenocranius kossogolicus* Ognev, Bull. Soc. Nat. Moscou, *31:* 80. Kosso Gol, North-Western Mongolia. (Status *fide* G. Allen.)

Microtus gregalis ravidulus Miller, 1899

1899. *Microtus ravidulus* Miller, Proc. Acad. Nat. Sci. Philadelphia, 284. Okchi Valley, Aksai, Eastern (Chinese) Turkestan. Range: to Eastern Kirghizia.

Microtus gregalis brevicauda Kastschenko, 1901

1901. *Microtus gregalis brevicauda* Kastschenko, Ann. Zool. Mus. Acad. Sci. St. Pétersb. *6:* 178. Type from near Yakutsk. Yakutia, except for its northern parts, forests of Transbaikalia and Upper Amur included in range.

Microtus gregalis angustus Thomas, 1908

1908. *Microtus angustus* Thomas, P.Z.S. 108. Tabool, 100 miles north-west of Kalgan, 5,000 ft., Inner Mongolia. A valid form according to G. Allen.

Microtus gregalis castaneus Kashkarov, 1923

1923. *Microtus (Stenocranius) castaneus* Kashkarov, Trans. Sci. Soc. Turkestan, *1:* 196. Chichkan, Talass Alatau, Western Tianshan Mountains.

Microtus gregalis buturlini Ognev, 1923

1923. *Stenocranius buturlini* Ognev, Biol. Mitt. Timiriazeff, *1:* 107. Ryusskoe Ust, Indigirka delta, North-Eastern Siberia. Range: to Kolyma and Anadyr regions, North-Eastern Siberia.

Microtus gregalis major Ognev, 1923

1923. *Stenocranius major* Ognev, Bull. Soc. Nat. Moscou, *31:* 83. Lake Nei-to, Yamal Peninsula, 70° N., North-Western Siberia. Range: from neck of White Sea, Russia, eastwards to Ob, Siberia. Vinogradov treated this form as a species, but Kuznetzov makes it a race.

Microtus gregalis montosus Argyropulo, 1932

1932. *Microtus (Stenocranius) gregalis montosus* Argyropulo, J. Mamm. *13:* 268. Sary-Tash, Alai Valley, Russian Pamir.

Microtus gregalis unguiculatus Koljuschev, 1936

1936. *Microtus (Stenocranius) gregalis unguiculatus* Koljuschev, Trav. Inst. Sci. Biol. Tomsk, *2:* 298. Mouth of Lena River, Siberia. Distribution includes Lower River Yana, North-Eastern Siberia.

Microtus gregalis dolguschini Afanasiev, 1939

1939. *Microtus gregalis dolguschini* Afanasiev, Bull. Kazakstan Branch Acad. Sci. U.S.S.R. No. 1, 28. Lower River Ili, Russian Turkestan. Apparently a distinct long-tailed form.

Microtus gregalis tarbagataicus Ognev, 1944

1944. *Microtus (Stenocranius) gregalis tarbagataicus* Ognev, C.R. Acad. Sci. Moscow, *43,* 4: 178. Tarbagatai Mountains, south of Semipalatinsk, Russian Central Asia.

MICROTUS GREGALIS TUNDRAE Ognev, 1944

1944. *Microtus (Stenocranius) gregalis tundrae* Ognev, C.R. Acad. Sci. Moscow, *43*, 4: 178. Near Tundra Station, 40 km. south of Arkhangelsk, Northern Russia.

MICROTUS GREGALIS ZACHVATKINI Heptner, 1945

1945. *Microtus (Stenocranius) gregalis zachvatkini* Heptner. C.R. Acad. Sci. Moscow, n.s. *49*, 5: 387. Aralskoie-Morie, Perovsky Bay, Sea of Aral, Russian Central Asia.

ORDER CETACEA

On this order see particularly:

BEDDARD. 1900. *A book of whales.* London.
FLOWER. 1885. *List of specimens of Cetacea in the British Museum.* London.
FRASER. 1937. (NORMAN & FRASER.) *Giant fishes, whales and dolphins*, 201–349. London.
GRAY. 1866. *Catalogue of seals and whales in the British Museum.* London.
KELLOGG. 1928. The history of whales. *Quart. Rev. Biol. 3:* 29–76, 174–208.
—— 1940. Whales, giants of the sea (a modern popular account). *Nat. Geogr. Mag. Washington, 77:* 35–90.
MILLER. 1923. (A classification of supergeneric groups.) *Smithson. Misc. Coll. 76*, No. 5.
SLIJPER. 1936. Die Cetaceen. *Capita Zoologica, 6 & 7.*
TRUE. 1889. A review of the family Delphinidae. *Bull. U.S. Nat. Mus.*, No. 36.
—— 1910. A review of the family Ziphiidae. *Bull. U.S. Nat. Mus.*, No. 73.
WINGE. 1918. Udsigt over Hvalernes indbyrdes Slaegtskab. *Vidensk. Medd. Naturh. Foren. Kbh. 70:* 59–142 (translation by Miller, 1921, *Smithson. Misc. Coll. 72*, No. 8, reprinted in Winge, 1942, *Interrelationships of Mammalian Genera, 3:* 222–302).

Simpson (1945) stresses the isolated position of this order among Mammalia, referring it to a separate "Cohort" from all other orders, and lists nine living families, all of which occur in the region now under discussion.

G. Allen, 1939, *Checklist of African Mammals*, has given useful synonymies of many of the genera and species.

As regards the "approximate distributions", more than in any other order it must be borne in mind that certain species of commercial value have been hunted almost to extinction, and the distributions in some cases are more likely to be those of the species in the last fifty or a hundred years rather than today.

The authors have no experience of this group, which clearly stands in need of revision; the difficulties with regard to a sufficiency of study specimens speak for themselves.

We are grateful to our colleague, Dr. F. C. Fraser, for his generous help in reading the manuscript and in checking the references, also for making various suggestions with respect to the arrangement.

The listing of species in this Order is of necessity entirely provisional.

FAMILIES: Balaenidae, page 717
Balaenopteridae, page 714
Delphinidae, page 730
Eschrichtiidae, page 713
Monodontidae, page 726
Phocaenidae, page 728
Physeteridae, page 720
Platanistidae, page 719
Ziphiidae, page 722

SUBORDER MYSTICETI

FAMILY ESCHRICHTIIDAE

Genus: *Eschrichtius*, page 713

Genus **ESCHRICHTIUS** Gray, 1864

1864. *Eschrichtius* Gray, Ann. Mag. N.H. *14:* 350. *Balaenoptera robusta* Lilljeborg.
1868. *Agaphelus* Cope, Proc. Acad. Nat. Sci. Philadelphia, 159, 223. *Agaphelus glaucus* Cope (v. Deinse & Junge, 1937).
1869. *Rhachianectes* Cope, Proc. Acad. Nat. Sci. Philadelphia, 15. *Agaphelus glaucus* Cope.

1 species: *Eschrichtius gibbosus*, page 713

See Van Deinse & Junge, 1937, *Temminckia, 2:* 178, on the nomenclature of this species. Also Lönnberg, 1938, *Fauna och Flora, 33:* 97.

Eschrichtius gibbosus Erxleben, 1777 Californian Grey Whale

Approximate distribution of species: Atlantic Ocean?. North Pacific, from Korea, Japanese coasts, Okhotsk Sea, Kamtchatka, and in summer to Bering Sea and Chukotskoe Peninsula (North-Eastern Siberia); to coasts of California, Mexico and Canada. Formerly ? off Holland (Fraser, 1938, 252), and has been found subfossil in Sweden, and England (Cornwall, Devon).

ESCHRICHTIUS GIBBOSUS Erxleben, 1777

1777. *Balaena gibbosa* Erxleben, Syst. Regn. Anim. 610. Atlantic.
1861. *Balaenoptera robusta* Lilljeborg, Forh. Skand. Naturf. *1860:* 602. Sweden, subfossil.
1868. *Agaphelus glaucus* Cope, Proc. Acad. Nat. Sci. Philadelphia, 160 and 225. Monterey Bay, California.

FAMILY BALAENOPTERIDAE

Genera: *Balaenoptera*, page 714
Megaptera, page 717

Genus **BALAENOPTERA** Lacepède, 1804

1804. *Balaenoptera* Lacepède, H.N. des Cétacés, xxxvi and 114. *Balaena rostrata* Fabricius = *Balaenoptera acutorostrata* Lacepède.
1829. *Rorqual* G. Cuvier, Regn. Anim. *1:* 298. Altered to *Rorqualus* F. Cuvier, 1836, H.N. des Cétacés, 303. Included *Balaena musculus* Linnaeus and *Balaena boops* Linnaeus.
1849. *Pterobalaena* Eschricht, K. Danske Vidensk. Selsk. Skr. *1:* 108. *Balaenoptera physalus* Linnaeus.
1864. *Benedenia* Gray, P.Z.S. 211. *Benedenia knoxii* Gray = *Balaena physalus* Linnaeus.
1864. *Sibbaldus* Gray, P.Z.S. 222, text f. 16–18. *Sibbaldus borealis* Gray (not Lesson) = *Balaena musculus* Linnaeus. Emended to *Sibbaldius* Flower, 1864, P.Z.S. 391.
1866. *Cuvierius* Gray, Cat. Seals & Whales B.M. 114. *Physalus latirostris* Flower = *Balaena musculus* Linnaeus.
1866. *Rudolphius* Gray, *loc. cit.* 170. *Sibbaldius laticeps* Gray = *Balaenoptera borealis* Lesson.
1866. *Swinhoia* Gray, *loc. cit.* 382. *Balaenoptera swinhoii* Gray.
1867. *Flowerius* Lilljeborg, Nova Acta Soc. Sci. Upsala, *6*, 6: 11. *Flowerius gigas* Eschricht = *Sibbaldus borealis* Gray = *Balaena musculus* Linnaeus.

4 species: *Balaenoptera acutorostrata*, page 714
Balaenoptera borealis, page 715
Balaenoptera musculus, page 716
Balaenoptera physalus, page 715

These species are well figured by Bobrinskii, 1944, *Mammals of U.S.S.R.*, 186.

Many authors refer *B. musculus* to a distinct genus *Sibbaldus*, which Bobrinskii (1944) treats as a subgenus. Dr. F. C. Fraser informs us that he sees no reason for putting the Blue Whale in a separate genus from the other rorquals and is inclined to suppress *Sibbaldus*.

Balaenoptera acutorostrata Lacepède, 1804 — Little Piked Whale; Lesser Rorqual

Approximate distribution of species: European seas, recorded from Britain, France, Norway, Spain, Holland, Mediterranean, Baltic and Black Seas; Spitzbergen, Iceland; Eastern Siberia, Barents Sea included; Japan; Bay of Bengal, India; African seas, probably including off Cape of Good Hope; Greenland; Canada and U.S.A. (Atlantic and Pacific) southwards to South America, Australia and Antarctic.

Balaenoptera acutorostrata Lacepède, 1804

1780. *Balaena rostrata* Fabricius, Fauna Groenlandica, 40. Not of Müller, 1776. Greenland seas.
1804. *Balaenoptera acuto-rostrata* Lacepède, H.N. des Cétacés, xxxvii and 134, pl. 8. Cherbourg, France.
1845. *Balaenoptera eschrichtii* Rasch, Nytt Mag. Naturv. *4:* 123. Swedish coasts.
1849. *Pterobalaena minor bergensis* Eschricht, K. Dankse Vidensk. Selsk. Skr. *1:* 109. Norway.
1877. *Sibbaldius mondinii* Capellini, Mem. Accad. Sci. Ist. Bologna, *7:* 423. Adriatic Sea.
1879. *Balaenoptera edeni* Anderson, Anat. Zool. Res. Yunnan Exped. 551, pl. 44. Gulf of Martaban, between Sittang and Beeling Rivers, Burma.

Balaenoptera borealis Lesson, 1828 — Sei Whale

Approximate distribution of species: "Atlantic and Pacific Oceans, ranging north to Spitzbergen, Iceland and Bering Sea, and southward to northern limit of drift ice in Antarctic seas; returning to tropical and subtropical waters for breeding and calving" (Anderson, 1947). Range includes Norway, rarely to Baltic, Britain, Novaya Zemlya; Eastern Siberia (Chukotskoe Sea), Korea, Japan; Borneo, Java; Siam; Southern Africa, Canada, both Atlantic and Pacific North America, South America, the Antarctic.

Balaenoptera borealis Lesson, 1828

1828. *Balaenoptera borealis* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 342. Grömitz, Lübeck Bay, Schleswig-Holstein, Germany.
(?) 1844. *Balaenoptera arctica* Temminck & Schlegel in Siebold, Fauna Japonica, Mamm. Marins, 26. Japan. Not of Schlegel, 1841.
1846. *Balaenoptera laticeps* Gray, Zool. Voy. Erebus & Terror, *1:* Mamm. 20. North Sea, coast of Holstein.
1850. *Physalus? iwasi* Gray, Cat. Cetacea B.M. 42. Japan. Renaming of *arctica.*
1865. *Sibbaldius schlegelii* Flower, P.Z.S. *1864:* 408. Java.

Balaenoptera physalus Linnaeus, 1758 — Common Rorqual; Finback

Approximate distribution of species: cosmopolitan, limited in northward range by pack ice of Arctic Ocean, and in south by Antarctic ice. Has been recorded from Scandinavia, British Isles, Spain, Italy, Iceland, Spitzbergen, rare Baltic, Barents Sea, Kara Sea (Siberia), Eastern Siberia north to Chukotskoe Sea; Japan, Korea, India, Java; Southern Africa, Natal included; Australia, Greenland, Canada, Atlantic and Pacific U.S.A., to South America, Australia and Antarctic.

Balaenoptera physalus Linnaeus, 1758

1758. *Balaena physalus* Linnaeus, Syst. Nat. 10th ed. *1:* 75. European seas (Spitzbergen according to Thomas, 1911).
1758. *Balaena boops* Linnaeus, Syst. Nat. 10th ed. *1:* 76. (Young of *B. physalus.*)
1804. *Balaenoptera rorqual* Lacepède, H.N. Cétacés, xxxvi and 126. Eastern North Atlantic, Scotland to Mediterranean.

BALAENOPTERA PHYSALUS [*contd.*]

1811. *Balaena sulcata* Neill, Mem. Werner. N.H. Soc. *1:* 212. Near Alloa, Scotland.
1828. *Balaenoptera mediterraneensis* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 361, 442. Renaming of *rorqual*.
1829. *Balaena antiquorum* Fischer, Synops. Mamm. 525. Mediterranean Sea.
1829. *Balaenoptera aragous* Farines & Carcassonne, Mém. sur un Cétacé échoué 27 Nov. 1928 (*sic*) sur la Côte de Saint-Cyprien, 6. Coast of St. Cyprien, Corsica.
1840. *Balaenoptera tenuirostris* Sweeting, Mag. N.H. J. Zool. *4:* 343. Charmouth Beach, England.
1841. *Balaena sulcata arctica* Schlegel, Abh. Gebiete Zool. 1: 38, pl. 6. Coast of Holland.
1856. *Physalus duguidii* Heddle, P.Z.S. 187, pls 44, 45. Island of Laman (or Lambholm), Orkney Islands.
1866. *Balaenoptera swinhoii* Gray, P.Z.S. *1865:* 725, figs. 1–6. Takow, Formosa.
1868. *Swinhoia chinensis* Gray, Synops. Whales & Dolphins, 3. Renaming of *swinhoii* Gray.
1879. *Balaenoptera blythii* Anderson, Anat. Zool. Res. Yunnan Exped. 564. Indian coast.

Balaenoptera musculus Linnaeus, 1758 — Great Blue Whale

Approximate distribution of species: "In summer near the polar pack ice of both hemispheres; rarely seen in tropical latitudes; migrations apparently correlated with period of abundance of small crustaceans on which they feed" (Anderson, 1947, *Cat. Canadian Recent Mammals*, 93). Including (or included) Iceland, Scandinavia, rarely the Baltic, British Islands, Spain, Murman coast of Russia, Kamtchatka, Bering Sea, Chukotskoe Sea; Japan; Straits of Malacca, Java; India (Burma, Sind, Malabar, Ceylon, ? Baluchistan according to Blanford), Arabian Sea (Blanford); South Africa; Greenland; Atlantic and Pacific North America, Canada included; South America, Mexico, to Australia and Antarctic.

BALAENOPTERA MUSCULUS Linnaeus, 1758

1758. *Balaena musculus* Linnaeus, Syst. Nat. 10th ed. *1:* 76. Firth of Forth, Scotland.
1804. *Balaenoptera jubartes* Lacepède, H.N. des Cétacés, 4to ed. xxxvii and 120. Greenland seas, to Iceland.
1847. *Physalus (Rorqualus) sibbaldii* Gray, P.Z.S. 92. Coast of Yorkshire, England.
1859. *Balaenoptera indica* Blyth, J. Asiat. Soc. Bengal, *28:* 488. Sondip, Bay of Bengal, India.
1865. *Physalus latirostris* Flower, P.Z.S. *1864:* 414.
1877. *Pterobalaena gryphus* Munter, Mitt. Naturw. Verein von Neu-Vorpommern. u. Rugen, *9:* 1, pls. 1–2. Wieck, near Greifswald, Germany.

Incertae sedis

Balaenoptera andrejewi Anon., Admonitio Piscaturae, 1888, 197–211 (*N.V.*); "ex oris Murmaniae (Siberia sept.?)". See Trouessart (1898, 1079.)
Balaenoptera grimmi Anon, *loc. cit.* (*N.V.*)

Genus **MEGAPTERA** Gray, 1846

1846. *Megaptera* Gray, Zool. Voy. Erebus & Terror, *1:* Mamm. 16. *Balaena nodosa* Bonnaterre.
1849. *Kyphobalaena* Eschricht, K. Danske Vidensk. Selsk. Skr. *1:* 108. *Kyphobalaena boops* Fabricius = *Balaena nodosa* Bonnaterre.
1864. *Poescopia* Gray, P.Z.S. 207, fig. 3. *Balaena lalandii* Fischer = *Balaena novaeangliae* Borowski.

1 species: *Megaptera novaeangliae*, page 717

Megaptera novaeangliae Borowski, 1781 Humpback Whale

Approximate distribution of species: widely distributed in the oceans of the world, according to Anderson passing winter in tropical and subtropical waters, migrating regularly and returning to Arctic and Antarctic in spring. Includes (or included) Spain, France, British Isles, Norway, Iceland, Spitzbergen, Barents Sea; Kamtchatka and Bering Sea; Persian Gulf; Japan; West and South Africa; Canada, U.S.A. (Atlantic and Pacific); West Indies, South America, to Antarctic; Australia, New Zealand.

MEGAPTERA NOVAEANGLIAE Borowski, 1781

1780. *Balaena boops* Fabricius, Fauna Groenlandica, 36. Not of Linnaeus, 1758.
1781. *Balaena novae angliae* Borowski, Gemeinn. Naturgesch. des Thierreichs, Berlin, *2*, 1: 21. New England coast.
1789. *Balaena nodosa* Bonnaterre, Tabl. Encycl. et Méthod d. Trois Règnes de la Nature, Cétologie, 5. New England coast.
1832. *Balaena longimana* Rudolphi, Abh. Preuss. Akad. Wiss. 133, pls. 1–5.
1841. *Balaena sulcata antarctica* Schlegel, Abh. Gebeite Zool. *1:* 43. South coast Japan.
1863. *Balaenoptera syncondylus* Müller, Schr. Phys.-ökon. Ges. Königsberg, *4:* 38, pls. 1–3. Germany.
1866. *Megaptera longimana* var. *moorei* Gray, Cat. Seals & Whales B.M. 122. Estuary of the Dee, Scotland.
1866. *Megaptera kuzira* Gray, *loc. cit.* 130. Renaming of *antarctica* Schlegel.
1883. *Megaptera indica* Gervais, C.R. Acad. Sci. Paris, *97:* 1566. Persian Gulf.

FAMILY BALAENIDAE

Genera: *Balaena*, page 718
Eubalaena, page 717

The two genera are well figured by Fraser and by Bobrinskii. Some authors consider the two as belonging to one genus, but it is evident that they are very different animals.

Genus **EUBALAENA** Gray, 1864

1864. *Eubalaena* Gray, P.Z.S. 201. *Balaena australis* Desmoulins from South Africa.
1864. *Hunterus* Gray, Ann. Mag. N.H. *14:* 349. *Hunterus temminckii* Gray = *Balaena glacialis* Bonnaterre. Emended to *Hunterius* Gray, 1866, Cat. Seals & Whales B.M. 78.

2 species in the area covered by this list, but one of them is of doubtful validity.

Eubalaena glacialis, page 718
Eubalaena sieboldi, page 718

Eubalaena glacialis Borowski, 1781 Black Right Whale

Approximate distribution of species: "In historic times (A.D. 1100 to 1800) was successively hunted in the Bay of Biscay, along north-western coast of Norway, around Iceland, in the Gulf of St. Lawrence near Newfoundland, and along the New England coast. A North Atlantic species, now rare or casual in any part of its former range" (Anderson, 1947, 90). Range formerly included British Isles, Spain, Spitzbergen, apparently Italy, Africa (part), Eastern Canada, etc.

EUBALAENA GLACIALIS Borowski, 1781

1781. *Balaena glacialis* Borowski, Gemeinn. Nat. d. Thierreichs, *2*, 1: 18. North Sea.
1804. *Balaena nordcaper* Lacepède, H.N. des Cétacés, 103, pls. 2, 3. North Atlantic, between Spitzbergen, Norway and Iceland.
1860. *Balaena biscayensis* Eschricht, Rev. Zool. Paris, *12:* 229. San Sebastian, Bay of Biscay, Spain.
1867. *Hunterius svedenborgii* Lilljeborg, Nova Acta Soc. Sci. Upsala, *6*, 2, 1: 35. Wänga, West Gothland, Sweden (subfossil).
1870. *Balaena britannica* Gray, Ann. Mag. N.H. *6:* 200. Off Lyme Regis, Southern England.
1877. *Balaena tarentina* Capellini, Mem. Accad. Sci. Ist. Bologna, *8:* 9, pl. 1. Gulf of Taranto, Italy.

Eubalaena sieboldi Gray, 1864

Approximate distribution of species: Japan, Kamtchatka, north-western North America. Now very rare.

G. Allen (1938, *Mamm. China & Mongolia*, 512) was uncertain how far this form differed from *Eubalaena glacialis*, but the same author, 1939, *Checklist African Mammals*, 263, included it in the synonymy of *Eubalaena australis* Desmoulins, 1822, the southern Right Whale. Kellogg (1940) recognizes all three species of Right Whale. On the other hand Bobrinskii (1944) recognizes one species only, *E. glacialis*, stating that there are three subspecies, which are frequently regarded as independent species although the differences between them are very obscure.

EUBALAENA SIEBOLDI Gray, 1864

(?) 1818. *Balaena japonica* Lacepède, Mém. Mus. H.N. Paris, *4:* 473. Japan.
1846. *Balaena japonica* Gray, Zool. Erebus & Terror, *1*, Mamm.: 15. For "*australis* Temminck & Schlegel" (which appears to be an error for *antarctica* Temminck & Schlegel). Not *B. japonica* Lacepède, 1818. Japan.
1864. *Balaena sieboldii* Gray, Ann. Mag. N.H. *14:* 349. For *japonica* Gray, preoccupied.

Genus **BALAENA** Linnaeus, 1758

1758. *Balaena* Linnaeus, Syst. Nat. 10th ed. *1:* 75. *Balaena mysticetus* Linnaeus.

1 species: *Balaena mysticetus*, page 719

Balaena mysticetus Linnaeus, 1758 Greenland Right Whale; Bowhead

Approximate distribution of species: formerly Arctic regions of Eurasia and North America, but now almost extinct. Bobrinskii states that today, as a result of overhunting, it only remains in small numbers in the waters off Chukotskoe Peninsula (North-Eastern Siberia) in the U.S.S.R., and that isolated individuals occur occasionally on the coasts of Greenland.

(Former range included Spitzbergen, Bering Sea, Sea of Okhotsk, Arctic Canada, Alaska, Kurile Islands, etc.)

Balaena mysticetus Linnaeus, 1758

1758. *Balaena mysticetus* Linnaeus, Syst. Nat. 10th ed. *1:* 75. Greenland Seas.
1874. *Balaena mysticetus roysii* Dall in Scammon, Marine Mamm. N.W. Coast N. America, 305. Okhotsk Sea.
1883. *Balaena mysticetus* forma *pitlekajensis* Malm, Bih. Svensk. Vetensk. Akad. Handl. *8*, 4: 37. Pitlekaj, North-Eastern Siberia.

suborder Odontoceti

Simpson (1945) divided living members of this suborder into three superfamilies: the Physeteroidea (Ziphiidae and Physeteridae), the Platanistoidea (Platanistidae), and the Delphinoidea for the remainder.

FAMILY PLATANISTIDAE

Genera: *Lipotes*, page 720
Platanista, page 719

Simpson divided this family into three subfamilies, one of which is extralimital (Neotropical). For characters of genera compared with their Neotropical allies, see Winge (1918).

Subfamily Platanistinae

Genus **PLATANISTA** Wagler, 1830

1830. *Platanista* Wagler, Nat. Syst. Amphib. 35. *Delphinus gangeticus* Lebeck.

1 species: *Platanista gangetica*, page 719

Platanista gangetica Lebeck, 1801 Gangetic Dolphin; Susu

Approximate distribution of species: India, the Indus, Ganges and Brahmaputra Rivers.

Platanista gangetica Lebeck, 1801

1801. *Delphinus gangeticus* Lebeck, Neue Schr. Ges. Naturf. Fr. Berlin, *3:* 280. Hooghly River, near Calcutta, India.
1801. *Delphinus rostratus* Shaw, Gen. Zool. *2*, 2: 514. Indian seas.
1817. *Delphinus shawensis* Blainville, Nouv. Dict. H.N. *9:* 153. Renaming of *rostratus*.
1859. *Platanista indi* Blyth, J. Asiat. Soc. Bengal, *28:* 493.

Subfamily Iniinae

Genus **LIPOTES** Miller, 1918

1918. *Lipotes* Miller, Smiths. Misc. Coll. *68*, 9: 2, pls. 1–13, text fig. 1. *Lipotes vexillifer* Miller.

1 species: *Lipotes vexillifer*, page 720

Lipotes vexillifer Miller, 1918 — Chinese River Dolphin

Approximate distribution of species: Tungting Lake, Yangtzekiang River, Hunan, China.

Lipotes vexillifer Miller, 1918

1918. *Lipotes vexillifer* Miller, Smiths. Misc. Coll. *68*, 9: 2, pls. 1–13, text fig. 1. Tungting Lake, Hunan, China.

FAMILY PHYSETERIDAE

Genera: *Kogia*, page 720
Physeter, page 721

These two genera are referred to distinct subfamilies by Simpson.

Subfamily Kogiinae

Genus **KOGIA** Gray, 1846

1846. *Kogia* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 22. *Physeter breviceps* Blainville.
1851. *Euphysetes* Wall, Mem. Australian Mus. Sydney, No. 1: 46. *Euphysetes gravii* Wall = *Physeter breviceps* Blainville.
1871. *Callignathus* Gill, Amer. Naturalist, *4:* 737, 738, 740 (footnote). *Physeter simus* Owen. Not *Callignathus* Costa, 1853, a fish.
1876. *Cogia* Wallace, Geogr. Distr. Anim. *2:* 208. Emendation of *Kogia*.

1 species: *Kogia breviceps*, page 721

Kogia breviceps Blainville, 1838 Pygmy Sperm Whale

Approximate distribution of species: has been recorded from France, Holland, Japan, India (Vizagapatam, Madras, Travancore), Annam, Nova Scotia, Eastern U.S.A., Lower California, Mexico, Peru, South Africa, Australia, New Zealand.

Kogia breviceps Blainville, 1838

1838. *Physeter breviceps* Blainville, Ann. franç. étr. Anat. Phys. *2:* 337, pl. 10. Cape of Good Hope, South Africa.

1866. *Physeter (Euphysetes) simus* Owen, Trans. Zool. Soc. London, *6*, 1: 30, pls. 10–14. Waltair, Madras Presidency, India.

Subfamily Physeterinae

Genus **PHYSETER** Linnaeus, 1758

1758. *Physeter* Linnaeus, Syst. Nat. 10th ed. *1:* 76. *Physeter catodon* Linnaeus.

1761. *Catodon* Linnaeus, Fauna Suecica, 18. *Catodon macrocephalus* Linnaeus = *Physeter catodon* Linnaeus.

1804. *Physalus* Lacepède, H.N. Cétacés, xl and 219. *Physalus cylindricus* Lacepède = *Physeter catodon* Linnaeus.

1865. *Meganeuron* Gray, P.Z.S. 440, figs. 1 and 4. *Catodon (Meganeuron) krefftii* Gray = *Physeter catodon* Linnaeus.

1 species: *Physeter catodon*, page 721

Physeter catodon Linnaeus, 1758 Sperm Whale

Approximate distribution of species: "Females and calves are found the year round in tropical waters, but old males in summer travel to or beyond the latitude of the South Shetland Islands of Antarctic in the south, and Iceland and the Bering Sea in the north" (Anderson, quoting Kellogg, 1940). European localities include (or included) British Isles, Spain, Scandinavia, the Baltic, the Mediterranean, the Azores, and Murman coast, Northern Russia; Asiatic localities include Eastern Siberia (Bering Sea, Sea of Okhotsk), Japan, Korea; (at least formerly) India and Ceylon, South China Sea, Java Sea, Straits of Malacca, Indian Ocean side of Sumatra and Java; also from Natal to west coast of South Africa, western and eastern sides North American coasts, Canada included, Mexico, West Indies, both sides of South America, Australia.

Physeter catodon Linnaeus, 1758

1758. *Physeter catodon* Linnaeus, Syst. Nat. 10th ed. *1:* 76. Kairston, Orkney Islands. (See Thomas, 1911, P.Z.S. 157.)

1758. *Physeter macrocephalus* Linnaeus, Syst. Nat. 10th ed. *1:* 76. "In Oceano Europaeo."

1758. *Physeter microps* Linnaeus, Syst. Nat. 10th ed. *1:* 76. "In Oceano septentrionali."

1758. *Physeter tursio* Linnaeus, Syst. Nat. 10th ed. *1:* 77. "In Oceano septentrionali."

FAMILY ZIPHIIDAE

Genera: *Berardius*, page 723
Hyperoodon, page 722
Mesoplodon, page 724
Ziphius, page 723

On this family see True, 1910, *Bull. U.S. Nat. Mus.* No. 73.

Genus **HYPEROODON** Lacepède, 1804

(?) 1804. *Anarnak* Lacepède, H.N. des Cétacés, xxxviii and 164. *Anarnak groenlandicus* Lacepède ? = *Balaena ampullata* Forster.
1804. *Hyperoodon* Lacepède, H.N. des Cétacés, xliv and 319. *Hyperoodon butskopf* Lacepède = *Balaena ampullata* Forster.
1811. *Ancylodon* Illiger, Prodr. Syst. Mamm. et Avium, 142. *Monodon spurius* Fabricius = *Balaena ampullata* Forster.
1811. *Uranodon* Illiger, *loc. cit.* 143. *Delphinus butskopf* Bonnaterre = *Balaena ampullata* Forster.
1825. *Cetodiodon* Jacob, Dublin Philos. J. *1:* 72. *Cetodiodon hunteri* Jacob = *Balaena ampullata* Forster.
1830. *Nodus* Wagler, Nat. Syst. der Amphibien, 34. *Delphinus edentulus* Schreber = *Balaena ampullata* Forster.
1843. *Chaenodelphinus* Eschricht, Förh. Skand. Naturf. 651. *Balaena rostrata* Müller = *Balaena ampullata* Forster.
1846. *Chaenocetus* Eschricht, Overs. Danske. Vidensk. Selsk. Forh. *1845:* 17. *Balaena ampullata* Forster. "The Naebhval."
1863. *Lagenocetus* Gray, P.Z.S. 200. *Lagenocetus latifrons* Gray = *Balaena ampullata* Forster. Emended to *Lagocetus* Gray, 1866, Cat. Seals & Whales B.M. 82.

1 species in the Palaearctic:

Hyperoodon ampullatus, page 722

Hyperoodon ampullatus Forster, 1770 — Bottlenose Whale

Approximate distribution of species: "During the summer Bottlenose Whales frequent the northern seas from Novaya Zemlya and Spitzbergen to the east and west coasts of Greenland, and in winter they somestimes go as far south as the Mediterranean Sea" (Anderson, quoting Kellogg, 1940). Localities include British Isles, France, Holland, Norway, Eastern Canada, Eastern U.S.A. Bobrinskii quotes it from Bering Sea, Eastern Siberia, and Murman coast, Northern Russia, and says it has once been taken in the White Sea. It occurs in the Baltic.

HYPEROODON AMPULLATUS Forster, 1770

1770. *Balaena ampullata* Forster in Kalm's Travels into North America, *1:* 18 (footnote). Maldon, Essex, England.
1776. *Balaena rostrata* Muller, Zool. Danicae Prodr. 7. No locality; Danish and Norwegian seas implied.

1789. *Delphinus bidentatus* Bonnaterre, Tabl. Encycl. Méth. des Trois Règnes de la Nature, Cétologie, 25, pl. 11, fig. 3. River Thames, England.
1789. *Delphinus butskopf* Bonnaterre, *loc. cit.* 25. Honfleur, France.
1802. *Delphinus edentulus* Schreber, Säugeth. *7:* 360. North Atlantic.
1804. *Delphinus diodon* Lacepède, H.N. Cétacés, xliii and 309, pl. 13, fig. 3. Near London, England.
(?) 1812. *Delphinus coronatus* Frémenville, Bull. Soc. Philom. Paris, *3:* 71. Spitzbergen.
1822. *Delphinus hunteri* Desmarest, Encyclop. Méth. Mamm. *2:* 520. River Thames, England.
1822. *Delphinus hyperoodon* Desmarest, *loc. cit.* 521. Near Honfleur, France.
1825. *Cetodiodon hunteri* Jacob, Dublin Philos. J. *1:* 72. Killiney, near Dublin, Ireland.
1827. *Heterodon dalei* Lesson, Man. Mamm. 419. Harwich, England; Havre, France, also mentioned.
1828. *Hyperoodon bidens* Fleming, Hist. Brit. Anim. 36. Near Maldon, England.
1828. *Hyperoodon honfloriensis* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 137 and 440. Honfleur, France.
1846. *Hyperoodon latifrons* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm. 27, pl. 4. Orkney Islands.
1847. *Hyperoodon borealis* Nilsson, Skand. Fauna, pt. 1, Mamm. 622. Iceland, Faeroe Islands, Greenland and Spitzbergen.

Genus **BERARDIUS** Duvernoy, 1851

1851. *Berardius* Duvernoy, Ann. Sci. Nat. Zool. *15:* 52. *Berardius arnouxii* Duvernoy (of the Southern Ocean).

1 Palaearctic species:

Berardius bairdi, page 723

Berardius bairdi Stejneger, 1883 — Baird's Beaked Whale

Approximate distribution of species: Eastern Siberia (Bering Sea), Japanese seas, Alaska and California.

Berardius bairdi Stejneger, 1883

1883. *Berardius bairdii* Stejneger, Proc. U.S. Nat. Mus. *6:* 75. Bering Island, Commander Islands, Bering Sea, Eastern Siberia.
1883. *Berardius vegae* Malm, Bihang Svenska Vet. Akad. Handl. *8*, 4: 109. Bering Island, Eastern Siberia.

Genus **ZIPHIUS** Cuvier, 1823

(?) 1814. *Epiodon* Rafinesque, Précis Découv. Somiol. 13. *Epiodon urganantus* Rafinesque ? = *Ziphius cavirostris* Cuvier.
1823. *Ziphius* G. Cuvier, Rech. Oss. Foss. *5*, 1: 350. *Ziphius cavirostris* G. Cuvier.
1846. *Xiphius* Agassiz, Nomenclator Zool. Index Univ. 389. Emendation.
1864. *Aliama* Gray, P.Z.S. 242. *Delphinus desmarestii* Risso = *Ziphius cavirostris* Cuvier.

Ziphius [*contd.*]

1865. *Petrorhynchus* Gray, P.Z.S. 524, two figs. *Hyperoodon capensis* Gray = *Ziphius cavirostris* Cuvier.

1865. *Ziphiorrhynchus* Burmeister, Revista Farmacéutica. (*M.V.*) 1866, Ann. Mag. N.H. *17:* 94, pl. 3. *Ziphiorrhynchus cryptodon* Burmeister = *Ziphius cavirostris* Cuvier.

1 species: *Ziphius cavirostris*, page 724

Ziphius cavirostris G. Cuvier, 1823 Cuvier's Beaked Whale

Approximate distribution of species: has been recorded from British Isles, France, Spain, Italy (Ligurian Sea), Corsica, Sweden; Bering Island, Eastern Siberia, Japan, India, Java; South Africa; British Columbia, Eastern United States, Buenos Ayres, Australia, Tasmania, New Ireland, New Zealand.

Ziphius cavirostris G. Cuvier, 1823

(?) 1814. *Epiodon urganantus* Rafinesque, Précis. Découv. Somiol. 13. Sicily.

1823. *Ziphius cavirostris* G. Cuvier, Rech. Oss. Foss. *5*, 1: 352, pl. 27, fig. 3. Near Fos, Bouches-du-Rhône, France.

1826. *Delphinus desmaresti* Risso, H.N. Europ. Mérid. *3:* 24. Mediterranean Sea.

1846. *Delphinus philippii* Cocco, Arch. Naturgesch. *12*, 1: 104, pl. 4, fig. c. Straits of Messina, Mediterranean Sea.

1850. *Hyperoodon doumetii* Gray, Cat. Spec. Mamm. B.M., Cetacea, 68. Corsica.

1851. *Hyperoodon gervaisi* Duvernoy, Ann. Sci. Nat. Zool. *15:* 49, 67. Coast of Aresquiers, near Frontignan, Dept. of Hérault, France

1871. *Pterorhynchus mediterraneus* Gray, Suppl. Cat. Seals & Whales B.M. 98. Mediterranean Sea.

1883. *Ziphius grebnitzkii* Stejneger, Proc. U.S. Nat. Mus. *6:* 77. Commander Islands, Bering Sea, Eastern Siberia.

Genus **MESOPLODON** Gervais, 1850

1828. *Aodon* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 155 and 440, pl. 3, fig. 1. *Aodon dalei* Lesson = *Physeter bidens* Sowerby.
Preoccupied by *Aodon* Lacepède, 1798 (not *Anodon* Lacepède, 1798, as given by Allen, 1939, Checklist of African Mammals, 261), a fish. Sherborn was of the opinion that *Aodon* Lacepède, 1798, was not available; in this case, *Aodon* Sonnini, 1803, Sonnini's Buffon, Poiss. *4:* 154, preoccupies.

1846. *Micropterus* Wagner, Schreb. Säugeth. *7:* 281, 352. Not of Lacepède, 1802. *Delphinus micropterus* Cuvier = *Physeter bidens* Sowerby.

1850. *Mesoplodon* Gervais, Ann. Sci. Nat. Zool. *14:* 16. *Delphinus sowerbiensis* Blainville = *Physeter bidens* Sowerby.

1850. *Dioplodon* Gervais, C.R. Acad. Sci. Paris, *31:* 512. *Delphinus densirostris* Blainville. Valid as a subgenus.

1851. *Mesodiodon* Duvernoy, Ann. Sci. Nat. Zool. *15:* 41. *Dioplodon sowerbyi* Gervais = *Physeter bidens* Sowerby.

1866. *Dolichodon* Gray, Cat. Seals & Whales B.M. 353. *Ziphius layardii* Gray from the Cape of Good Hope.

1871. *Callidon* Gray, Ann. Mag. N.H. *7:* 368. *Mesoplodon güntheri* Krefft = *Ziphius layardi* Gray.
1871. *Neoziphius* Gray, Suppl. to Cat. Seals & Whales B.M. 101. *Dioplodon europaeus* Gervais.
1876. *Oulodon* Von Haast, P.Z.S. 547. *Mesoplodon grayi* Von Haast.
1922. *Paikea* Oliver, P.Z.S. 574. *Berardius hectori* Gray from New Zealand.

6 species in the area covered by this list:

Mesoplodon bidens, page 725
Mesoplodon densirostris, page 726
Mesoplodon gervaisi, page 725
Mesoplodon grayi, page 726
Mesoplodon mirus, page 726
Mesoplodon stejnegeri, page 726

Good figures on the lower jaw of all the species just listed except *grayi* are published in Fraser, 1938, *Giant Fishes, Whales and Dolphins*, 279. The typical group is small-toothed. *Dioplodon* Gervais, 1850, is available for the large-toothed group, and in our opinion is of some subgeneric value. The prior name for *Mesoplodon europaeus auct.* seems to be *M. gervaisi.*

Subgenus *MESOPLODON* Gervais, 1850

Mesoplodon bidens Sowerby, 1804 Sowerby's Whale

Approximate distribution of species: recorded from France, British Isles, Holland, Belgium, Germany, Norway, Sweden, Italy, and off eastern United States.

Mesoplodon bidens Sowerby, 1804

1804. *Physeter bidens* Sowerby, Trans. Linn. Soc. London, *7:* 310. Coast of Elginshire, Scotland.
1817. *Delphinus sowerbensis* Blainville, Nouv. Dict. H.N. *9:* 177. Renaming of *bidens.*
1828. *Aodon dalei* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, pl. 3. North European waters.
1829. *Delphinus micropterus* Cuvier, Regn. Anim. *1:* 288. Coast of France.
1846. *Ziphius sowerbiensis* Gray, Zool. Erebus & Terror, Mamm. 27. Emendation of *sowerbensis.*

Mesoplodon gervaisi Deslongchamps, 1866 Gervais' Beaked Whale

Approximate distribution of species: known from the English Channel, also New Jersey, Florida, New York, Long Island, U.S.A. (Anderson, 1947).

Mesoplodon gervaisi Deslongchamps, 1866

1852. *Dioplodon europaeus* Gervais, Zool. Pal. Fr. *2*, text to pl. 40, *nom. nud.*
1866. *Dioplodon gervaisi* Deslongchamps, Bull. Soc. Linn. Normandie, *10:* 176. Renaming of the specimen referred to by Gervais, 1852. English Channel.
1869–70. *Dioplodon europaeus* Gervais in Van Beneden & Gervais, Osteogr. Cétacés, pl. 24.

Mesoplodon mirus True, 1913 True's Beaked Whale

Approximate distribution of species: Ireland, Outer Hebrides; North Carolina north to Nova Scotia.

MESOPLODON MIRUS True, 1913

1913. *Mesoplodon mirum* True, Smiths. Misc. Coll. *60*, 25: 1. Beaufort Harbor, Cartaret County, North Carolina, U.S.A.

Mesoplodon grayi von Haast, 1876

Approximate distribution of species: Chatham Islands (east of New Zealand), New Zealand, Australia, Patagonia; a specimen stranded in Holland, 1927 (see Boschma, 1950, Verh. Ned. Akad. Wet. *53:* 779).

MESOPLODON GRAYI von Haast, 1876

1876. *Mesoplodon grayi* von Haast, P.Z.S. 9. Waitangi beach, Chatham Islands, east of New Zealand.

Subgenus *DIOPLODON* Gervais, 1850

Mesoplodon densirostris Blainville, 1817 Blainville's Beaked Whale

Approximate distribution of species: has been taken off Madeira, and listed from Kiushiu, Japan, by Kuroda. Other localities are eastern United States north to Canada, South Africa, Seychelles off East Africa, Lord Howe Island (east of Australia).

MESOPLODON DENSIROSTRIS Blainville, 1817

1817. *Delphinus densirostris* Blainville, Nouv. Dict. H.N. *9:* 178. Type locality unknown.

Mesoplodon stejnegeri True, 1885 Stejneger's Beaked Whale

Approximate distribution of species: known from Bering Island off Eastern Siberia, and coast of Oregon, U.S.A.

MESOPLODON STEJNEGERI True, 1885

1885. *Mesoplodon stejnegeri* True, Proc. U.S. Nat. Mus. *8:* 584, pl. 25, figs. 1 and 2. Bering Island, Commander Islands, Bering Sea, Eastern Siberia.

FAMILY MONODONTIDAE

Genera: *Delphinapterus*, page 727
Monodon, page 728

The dental peculiarity of *Monodon* is unique and we follow Miller in referring the two genera listed above to two distinct subfamilies. This group is often referred, as a subfamily, to the Delphinidae, but Simpson regards it as a family distinct.

Subfamily Delphinapterinae

Genus **DELPHINAPTERUS** Lacepède, 1804

1804. *Delphinapterus* Lacepède, Hist. Nat. Cétacés, xli. *Delphinapterus beluga* Lacepède = *Delphinus leucas* Pallas.
1815. *Beluga* Rafinesque, Anal. Nat. 60. Renaming of *Delphinapterus*.

1 species: *Delphinapterus leucas*, page 727

Delphinapterus leucas Pallas, 1776 White Whale; Beluga

Approximate distribution of species: Arctic regions of Eurasia and North America. Rarely as far south as Scotland and Ireland, Baltic Sea, and according to Kuroda, Japan. For Canadian range see Anderson, 1947, *Cat. Canadian Recent Mammals*, 86. Norway. In U.S.S.R., Barents Sea, White Sea, Kara Sea, west of Laptev Sea; Chukotskoe Sea, Bering Sea, Sea of Okhotsk and Tartarsk Strait (north of Sea of Japan); penetrating far up the large rivers, the Amur, Anadyr, Ob and Yenesei. Bobrinskii recognizes three subspecies.

Delphinapterus leucas leucas Pallas, 1776

1762. *Cetus albicans* Brisson, Regn. Anim. 227. Unavailable.
1776. *Delphinus leucas* Pallas, Reise Russ. Reichs. *3:* 85 (footnote). Mouth of Ob River, Siberia.
1804. *Delphinapterus beluga* Lacepède, H.N. Cétacés, xli. According to Bobrinskii, in the U.S.S.R., spends the summer in Kara Sea, the west of Laptev Sea, Pechora Bay, Cheshkaya Bay and north of the White Sea, and winters in the Barents Sea.

Delphinapterus leucas freimani Klumov, 1935

1935. *Delphinapterus freimani* Klumov, Biul[1]. rybnogo Khoziaistvo SSSR., Moscou, No. 7: 26–28, fig. 2. White Sea. (*N.V.*) According to Bobrinskii, spends the summer in the White Sea and winters in the Barents Sea; chiefly distinguished from the last by average smaller size; perhaps a valid species or perhaps a synonym of the above.

Delphinapterus leucas dorofeevi Barabash & Klumov, 1935

1935. *Delphinapterus dorofeevi* Barabash & Klumov, Biull. rybnogo Khoziaistvo SSSR., Moscou, No. 11: 24. Okhotsk Sea, Eastern Siberia. (*N.V.*) Described from Sakhalin Bay (South-Western Sakhalin) according to Bobrinskii; inhabits Tatarsk Strait, the Sea of Okhotsk, and Bering Sea, Eastern Siberia.

Subfamily Monodontinae

Genus **MONODON** Linnaeus, 1758

1758. *Monodon* Linnaeus, Syst. Nat. 10th ed. *1:* 75. *Monodon monoceros* Linnaeus.
1804. *Narwalus* Lacepède, H.N. Cétacés, xxxvii. *Narwalus vulgaris* Lacepède = *Monodon monoceros* Linnaeus.

1 species: *Monodon monoceros*, page 728

Monodon monoceros Linnaeus, 1758 Narwhal

Approximate distribution of species: Arctic Ocean. For Canadian range see Anderson, 1947, *Checklist Canadian Recent Mammals*, 87. Rarely as far south as British Isles, Holland, Norway, and Arctic U.S.S.R. Has once been taken in the White Sea.

Monodon monoceros Linnaeus, 1758

1758. *Monodon monoceros* Linnaeus, Syst. Nat. 10th ed. *1:* 75. Arctic Seas.
1804. *Narwalus vulgaris* Lacepède, H.N. Cétacés, xxxvii and 142.
1804. *Narwalus microcephalus* Lacepède, *loc. cit.* xxxviii and 159, pl. 9, fig. 1.
1804. *Narwalus andersonianus* Lacepède, *loc. cit.* xxxviii and 163, based on some tusks which Anderson saw at Hamburg and which had an entirely smooth surface.

FAMILY PHOCAENIDAE

Genera: *Neomeris*, page 729
Phocaena, page 728

This family is included by many authors in the Delphinidae. *Phocoenoides* is here treated as a subgenus of *Phocaena*.

Genus **PHOCAENA** G. Cuvier, 1817

1816. *Phocoena* G. Cuvier, Regne Anim. 1817, *1:* 279. (Unavailable, Sherborn.)
1817. *Phocaena* G. Cuvier, Nouv. Dict. H.N. *9:* 163. *Delphinus phocoena* Linnaeus.
1821. *Phocena* Gray, London Med. Repos. *15:* 310. *Pro Phocaena* Cuvier, 1817.
1911. *Phocoenoides* Andrews, Bull. Amer. Mus. N.H. *30:* 31. *Phocoenoides truei* Andrews, Valid as a subgenus.

2 species in the area covered by this list:

Phocaena dalli, page 729
Phocaena phocoena, page 728

Subgenus *PHOCAENA* G. Cuvier, 1817

Phocaena phocoena Linnaeus, 1758 Porpoise

Approximate distribution of species: North Atlantic; northern limits include Iceland, White Sea and Davis Strait according to Anderson, and southern limits Straits

of Gibraltar, New Jersey, and (according to Miller) Mexico. It is common off the British Isles, and occurs Spain, Holland, Scandinavia, North Sea; Bobrinskii says that in Russian waters it is common on the Murman coast and in the Baltic, and occurs Black Sea and Sea of Azov. Mediterranean Sea. Japan, and North Pacific.

PHOCAENA PHOCOENA PHOCOENA Linnaeus, 1758

1758. *Delphinus phocoena* Linnaeus, Syst. Nat. 10th ed. *1:* 77. Swedish Seas.
1804. *Delphinus ventricosus* Lacepède, H.N. Cétacés, xliii and 311. River Thames, England.
1827. *Phocaena communis* Lesson, Man. Mamm. 413. Atlantic Ocean.
1935. *Phocaena phocaena acuminata* Deinse, Lev. Nat. *40:* 115. Dishoeck Zoutelande, Walcheren, Holland.
1946. *Phocaena phocaena acuminata* var. *conidens* Deinse, Zool. Med. Leiden, *26:* 159. Zoutelande, Walcheren, Holland.

PHOCAENA PHOCOENA RELICTA Abel, 1905

1905. *Phocaena relicta* Abel, Jb. Geol. Reichsanst, *55:* 388. Black Sea.

Subgenus *PHOCOENOIDES* Andrews, 1911

Phocaena dalli True, 1885 Dall's Porpoise

Approximate distribution of species: Japan, Eastern Siberia (Kamtchatka, Chukotka), Aleutian Islands, Alaska to California.

PHOCAENA DALLI DALLI True, 1885

1885. *Phocaena dalli* True, Proc. U.S. Nat. Mus. *8:* 95. Strait west of Adakh Island, Aleutian Islands, off Alaska. According to Kuroda has been recorded from one locality in Japan, and apparently (according to Bobrinskii) occurs in Eastern Siberia.

PHOCAENA DALLI TRUEI Andrews, 1911

1911. *Phocoenoides truei* Andrews, Bull. Amer. Mus. N.H. *30:* 32, pls. 1 and 2, figs. 1–23. Ayukawa in Rikuyen, Hondo, Japan.

Genus **NEOMERIS** Gray, 1846

1846. *Neomeris* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 30. *Delphinus phocaenoides* G. Cuvier.
1847. *Meomeris* Gray, List. Osteol. Specimens B.M., xii, 36 (misprint).
1899. *Neophocaena* Palmer, Proc. Biol. Soc. Washington, *13:* 23. For *Neomeris* believed to be preoccupied by *Neomeris* Lamouroux, 1816, thought to have been a polyp, but which appears to be an alga (see Thomas, 1922, Ann. Mag. N.H. *11:* 676; and 1925, *ibid. 16:* 655).

1 species: *Neomeris phocaenoides*, page 730

Neomeris phocaenoides G. Cuvier, 1829 Black Finless Porpoise

Approximate distribution of species: Japan, China (ascending rivers, recorded from Tungting Lake, Yangtzekiang River), Java, Sumatra, Borneo, Straits of Malacca, Calcutta, Peninsular India, west to Karachi, according to Blanford.

NEOMERIS PHOCAENOIDES Cuvier, 1829

1829. *Delphinus phocaenoides* Cuvier, Règne Anim. *1:* 291. Said to be from the Cape of Good Hope, where the animal does not occur according to G. Allen. Perhaps from Malabar coast (cf. G. Allen, 1938, Mamm. China & Mongolia, *1:* 502).
1841. *Delphinus melas* Schlegel, Abh. Gebiete Zool. *1:* 32. Not of Traill, 1809.
1869. *Delphinapterus molagan* Owen, Trans. Zool. Soc. London, *6:* 24. Madras.
1884. *Neomeris kurrachiensis* Murray, Ann. Mag. N.H. *13:* 351. Karachi, Sind, India.

FAMILY DELPHINIDAE

Genera: *Delphinus*, page 730
Globicephala, page 740
Grampus, page 741
Lagenorhynchus, page 736
Lissodelphis, page 737
Orcaella, page 738
Orcinus, page 739
Pseudorca, page 738
Sotalia, page 733
Stenella, page 731
Steno, page 734
Tursiops, page 735

See True, 1889, Review of the Delphinidae, *Bull. U.S. Nat. Mus.* No. 36.

Genus **DELPHINUS** Linnaeus, 1758

1758. *Delphinus* Linnaeus, Syst. Nat. 10th ed. *1:* 77. *Delphinus delphis* Linnaeus.
1846. *Rhinodelphis* Wagner, Schreb. Säugeth. *7:* 281, 316. *Delphinus delphis* Linnaeus (G. Allen, 1939).

2 species in the area covered by this list:

Delphinus capensis, page 731
Delphinus delphis, page 730

Delphinus delphis Linnaeus, 1758 Common Dolphin

Approximate distribution of species: temperate or warm seas throughout the world. Occurs off southern British Isles, France, Spain, Mediterranean Sea, Black Sea (rarely to Norway, Iceland and Baltic Sea: Bobrinskii); Japan, Straits of Malacca, Southern India; African seas, including Egypt, Algeria; Madagascar; to Australia. Both eastern and western North America, northwards to Canada; and South America.

Delphinus delphis delphis Linnaeus, 1758

1758. *Delphinus delphis* Linnaeus, Syst. Nat. 10th ed. *1:* 77. European seas.
1860. *Delphinus algeriensis* Loche, Rev. Zool. Paris, *12:* 474, pl. 22, fig. 1. Coast of Algeria.
1866. *Delphinus pomeegra* Owen, Trans. Zool. Soc. London, *6:* 23, pl. 6, fig. 3. Off coast of Madras, India.
1868. *Delphinus marginatus* Lafont, Actes Soc. Linn. Bordeaux, *26:* 518. Arcachon, Dept. Gironde, France. Not of Duvernoy, 1856.
1881. *Delphinus delphis fusus* Fischer, Actes Soc. Linn. Bordeaux, *35:* 127. Arcachon, France.
1881. *Delphinus delphis souverbianus* Fischer, *loc. cit.* Arcachon, France.
1881. *Delphinus delphis variegatus* Fischer, *loc. cit.* Arcachon, France.
1881. *Delphinus delphis balteatus* Fischer, *loc. cit.* Arcachon, France.
1881. *Delphinus delphis moschatus* Fischer, *loc. cit.* Arcachon, France.
1883. *Delphinus delphis* var. *curvirostris* Riggio, Nat. Sicil. *2:* 158. Mediterranean.
1932. *Delphinus roseiventris* Ogawa, Saito Hoonkai Jiho, Nos. 69–70: 13. Japan. (*N.V.*) Not of Wagner, 1844–46.

Delphinus delphis ponticus Barabash, 1935

1935. *Delphinus delphis ponticus* Barabash, Bull. Soc. Nat. Moscou, Sect. Biol. *44:* 246. Black Sea.

Delphinus capensis Gray, 1828 Cape Dolphin

Approximate distribution of species: South Africa; Japan (Kuroda, 1938). There is a skull from near Palestine in the British Museum which suggests this species.

Delphinus capensis Gray, 1828

1828. *Delphinus capensis* Gray, Spic. Zool. *1,* 2: pl. 2, fig. 1. Cape of Good Hope, South Africa.

Incertae sedis

Delphinus frithii Blyth, 1859, J. Asiat. Soc. Bengal, *28:* 492. Locality uncertain; "procured during a voyage from England to India".

Delphinus dussumieri Blanford, 1891, Fauna Brit. India, Mamm. 588. Malabar coast, India. Based on *Delphinus longirostris* Cuvier, 1829, Règne Anim. *1:* 288; not of Gray, 1828.

Genus **STENELLA** Gray, 1866

1864. *Clymene* Gray, P.Z.S. 237. *Delphinus euphrosyne* Gray. Not of Oken, 1815 (a mollusc), nor Lamarck, 1818 (a polychaete), nor Savigny, 1822 (a polychaete).
1866. *Stenella* Gray, P.Z.S. 213. *Steno attenuatus* Gray.
1868. *Clymenia* Gray, Synops. of Whales & Dolphins, 6. No type specified; not of Munster, 1839 (a mollusc).
1877. *Prodelphinus* van Beneden & Gervais, Ost. des Cétacés, 604. Substitute for *Clymenia* Gray.

5 of the named species seem certain to occur in the area covered by this list:

Stenella alope, page 733
Stenella caeruleoalbus, page 732
Stenella frontalis, page 732
Stenella malayana, page 732
Stenella styx, page 733

This genus is in chaos, and much in need of revision. The earliest name is *S. malayana*, a very little known species. There seems no doubt that the name *styx* must replace the better-known *euphrosyne*. Bobrinskii says *styx* ("*euphrosyne*") is a subspecies of *caeruleoalbus*. True put *alope* in the synonymy of *longirostris* Gray, but it has a shorter beak than the latter (B.M. specimens from Ceylon) and Dr. Fraser considers it to be a valid species.

In addition to the forms listed above, *S. longirostris* Gray, 1828 (*Delphinus longirostris* Gray, Spic. Zool. *1:* 1, locality unknown) is recorded from Japan by Kuroda.

Pending revision, all that can be done here is to list the forms in the order in which they were named.

Stenella malayana Lesson, 1826 Malay Dolphin

Approximate distribution of species: according to Blanford, Bay of Bengal, near the Sundarbans. Besides this locality, from Singapore, Java, Banka Strait, and Celebes according to Trouessart.

STENELLA MALAYANA Lesson, 1826

1826. *Delphinus malayanus* Lesson, Voy. Coquille, Zool. *1:* 184, atlas, pl. 9, 5. Between Java and Borneo.

(?) 1829. *Delphinus velox* Cuvier, Règne Anim. *1:* 288. "Between Ceylon and the Equator."

Stenella frontalis Cuvier, 1829 Bridled Dolphin

Approximate distribution of species: Atlantic and Indian Oceans, according to Fraser. Apparently the range includes Algeria. Kuroda listed it from Quelpart Island (Japanese seas).

STENELLA FRONTALIS G. Cuvier, 1829

1829. *Delphinus frontalis* G. Cuvier, Règne. Anim. *1:* 288. Cape Verde Islands, West Africa.

1836. *Delphinus fraenatus* F. Cuvier, H.N. Cétacés, 155, pl. 10, fig. 1. Cape Verde Islands, West Africa.

1860. *Delphinus mediterraneus* Loche, Rev. Zool. Paris, *12:* 475, pl. 22, fig. 2. Coast of Algeria.

Stenella caeruleoalbus Mayen, 1833 Blue-White Dolphin

Approximate distribution of species: typically from South America. Bobrinskii and Kuroda both state that the species occurs in Japan.

STENELLA CAERULEOALBUS Mayen, 1833

1833. *Delphinus caeruleo-albus* Mayen, Nova Acta Leop. Carol. *16*, 2: 609, pl. 43, fig. 2. Vicinity of Rio de la Plata, east coast of South America.

Stenella styx Gray, 1846

Approximate distribution of species: Atlantic and North Pacific; recorded from Shetland and Orkney Islands, Southern England, Dieppe (Northern France), Orb River (Southern France); West and South Africa; Greenland, Massachusetts, Jamaica.

STENELLA STYX Gray, 1846

1846. *Delphinus styx* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 39, pl. 21. West coast of Africa.
1846. *Delphinus euphrosyne* Gray, *loc. cit.* 40, pl. 22. Locality unknown.
1853. *Delphinus tethyos* Gervais, Bull. Soc. Agric. Hérault, *40:* 150, 153, pl. 1, figs. 1–4. Mouth of Orb River, Hérault, France.
1856. *Delphinus marginatus* Duvernoy in Pucheran, Rev. Zool. Paris, *8:* 545, pl. 25. Near Dieppe, France.

True (1889) regarded *styx* and *euphrosyne* as synonyms but chose the name *euphrosyne*, in spite of the priority of *styx*, apparently on the ground that the type of *styx* was lost.

Stenella alope Gray, 1850

Approximate distribution of species: specimens in British Museum from Ceylon.

STENELLA ALOPE Gray, 1850

1850. *Delphinus alope* Gray, Cat. Spec. Mamm. B.M., Cetacea, 118. No locality.

Genus **SOTALIA** Gray, 1866

1866. *Sotalia* Gray, Cat. Seals & Whales B.M. 393, 401. *Sotalia guianensis* Van Beneden, from British Guiana.

3 species in the area covered by this list:

Sotalia lentiginosa, page 734
Sotalia plumbea, page 734
Sotalia sinensis, page 733

Sotalia perniger of earlier authors is here, following Fraser, considered a synonym of *Tursiops aduncus*.

Sotalia sinensis F. Cuvier, 1835 Chinese White Dolphin

Approximate distribution of species: coast of Southern China.

SOTALIA SINENSIS F. Cuvier, 1835

1835. *Delphinus sinensis* F. Cuvier (1836), H.N. des Cétacés, 213. Canton River, Southern China. (Published December, 1835, according to Sherborn, and based on the *Delphinus chinensis* of Osbeck, 1757, Ostindisk Resa, 258.)

Sotalia plumbea G. Cuvier, 1829 Plumbeous Dolphin

Approximate distribution of species: Indian Ocean; according to Blanford, Ceylon, Madras, Malabar coast and Karachi, India, and "said to be common in tidal estuaries in Burma". Also Straits of Malacca.

SOTALIA PLUMBEA G. Cuvier, 1829

1829. *Delphinus plumbeus* G. Cuvier, Règne. Anim. *1*: 288. Malabar, India.

Sotalia lentiginosa Gray, 1866 Speckled Dolphin

Approximate distribution of species: India; quoted from Vizagapatam, near Bombay and Ceylon by Blanford. (In the Cape Town Museum there is a skull, said to have been taken in False Bay, near Cape Town, bearing this name.)

SOTALIA LENTIGINOSA Gray, 1866

1866. *Delphinus* (*Steno*?) *lentiginosus* Gray, Cat. Seals, Whales, B.M. (2nd ed.), 394 (ex Owen MS.). Waltair, Vizagapatam, Madras, India.

Incertae sedis

1866. *Delphinus* (*Steno*?) *maculiventer* Owen, Trans. Zool. Soc. London, *6*, 1: 21. Vizagapatam, Madras, India.

Genus **STENO** Gray, 1846

1846. *Steno* Gray, Zool. Erebus & Terror, *1*, Mamm.: 43. *Delphinus rostratus* Desmarest = *Delphinus bredanensis* Lesson.

1936. *Stenopontistes* Miranda-Ribeiro, Boll. Mus. Nac. Rio de Janeiro, *12:* 19, 42. *Stenopontistes zambezicus* Miranda-Ribeiro = *Delphinus bredanensis* Lesson.

1 species: *Steno bredanensis*, page 734

Steno bredanensis Lesson, 1828 Rough-toothed Dolphin

Approximate distribution of species: recorded from France, Portugal, Holland; Japan, according to Kuroda; Aden district; Bay of Bengal (near Nicobar Islands, Blanford); Java; Zambesi, South-East Africa; Florida.

STENO BREDANENSIS Lesson, 1828

1817. *Delphinus rostratus* Desmarest, Nouv. Dict. H.N. *9:* 160. Near Paimpol, France. Not of Shaw, 1801.

1823. *Delphinus frontatus* G. Cuvier, Rech. Oss. Foss. *5*, 1: 278. Lisbon, Portugal. (Part, see Flower, 1884, P.Z.S. *1883:* 482.)

1828. *Delphinus bredanensis* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 206. European seas.

1836. *Delphinorhynchus santonicus* Lesson, H.N. Mamm. 330. Ile d'Aix, River Charente, France.
1841. *Delphinus reinwardtii* Schlegel, Abh. Gebiete Zool. *1:* 27, pl. 3, figs. 2, 3. Indian Archipelago.
1841. *Delphinus planiceps* Schlegel, *loc. cit.* pl. 4, fig. 8. Dutch coast.

Genus **TURSIOPS** Gervais, 1855

1855. *Tursiops* Gervais, H.N. des Mamm. *2*: 323. "*Delphinus tursio* Fabricius" = *Delphinus truncatus* Montagu.

2 species in the area covered by this list:

Tursiops aduncus, page 735
Tursiops truncatus, page 735

In addition, Kuroda quotes one specimen of *Tursiops gilli* (Dall, 1873, *Proc. Calif. Acad. Sci. 5:* 13, Monterey, California) from Japan. Bobrinskii makes *gilli* a race of "*tursio*" (*truncatus*).

Tursiops truncatus Montagu, 1821 — Bottlenosed Dolphin

Approximate distribution of species: Europe, from North Sea to Bay of Biscay and Mediterranean (British Isles, France, Spain included) (also Norway and Baltic where rare, according to Bobrinskii); Black Sea. Atlantic North America, Maine to Florida, Texas, Mexico. Blanford listed it from Seychelles and Muscat, also Bay of Bengal. Has been recorded from New Zealand.

TURSIOPS TRUNCATUS TRUNCATUS Montagu, 1821

1821. *Delphinus truncatus* Montagu, Mem. Wernerian N.H. Soc. Edinburgh, *3*, 75, pl. 3. Duncannon Pool, near Stoke Gabriel, about 5 miles up the River Dart, Devonshire, England.
1846. *Delphinus eurynome* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 38, pl. 17. Locality unknown.
1862. *Delphinus tursio obtusus* Schlegel, N.H. Nederland, Zoogdieren, pl. 13. Renaming of *truncatus*.

Bobrinskii (1944) calls this species *Tursiops tursio* (*Delphinus tursio* Fabricius, 1780, *Fauna Groenlandica*, 49, South Greenland Seas). But see True, 1903, *Proc. Acad. Nat. Sci. Philadelphia, 55:* 313.

TURSIOPS TRUNCATUS PONTICUS Bobrinskii, 1944

1944. *Tursiops tursio ponticus* "Barabash", Bobrinskii, Mamm. U.S.S.R. 214. Black Sea. We are unable to trace an earlier reference to this form.

Tursiops aduncus Ehrenberg, 1833 — Red Sea Bottlenosed Dolphin

Approximate distribution of species: Red Sea, Indian Ocean (Vizagapatam, Karachi), Java, Sumatra, South Africa, Australia.

Tursiops aduncus Ehrenberg, 1833

1833. *Delphinus aduncus* Ehrenberg in Hemprich & Ehrenberg, Symb. Phys. Mamm. *2:* sig. k (footnote). Belhosse Island, Red Sea.
1842. *Delphinus abusalam* Rüppell, Mus. Senckenberg, *3:* 140, Tab. XII, figs. 1–6. Red Sea.
? 1846. *Delphinus hamatus* Wiegmann, Schreb. Säugeth. *7:* pl. 369.
1848. *Delphinus perniger* Blyth, J. Asiat. Soc. Bengal, *17:* 250. Bay of Bengal.
1862. *Delphinus catalania* Gray, P.Z.S. 143. North coast Australia.
1866. *Delphinus (Steno) gadamu* Owen, Trans. Zool. Soc. London, *6,* 1: 17, pls. 3, 4. India.
1874. *Delphinus caerulescens* Giglioli, Zool. della Magenta I. Cetacei d. R.P. Magenta, 1865–68, 88. Australian seas.

We are indebted to Dr. F. C. Fraser for the above synonymy.

Incertae sedis

1886. *Tursiops parvimanus* Beneden, Ann. Mus. N.H. Belg. *13:* 100. Adriatic Sea. A doubtful form, based on a young specimen.
1903. *Tursiops fergusoni* Lydekker, J. Bombay N.H. Soc. *15:* 41, pl. B. Travancore, India.
1909. *Tursiops dawsoni* Lydekker, P.Z.S. *1908:* 806. Off Trivandrum, Southern India.

Genus **LAGENORHYNCHUS** Gray, 1846

1846. *Lagenorhynchus* Gray, Ann. Mag. N.H. *17:* 84. *Lagenorhynchus albirostris* Gray.
1866. *Electra* Gray, Cat. Seals & Whales B.M. 268. *Lagenorhynchus electra* Gray.
1866. *Leucopleurus* Gray, P.Z.S. 216. *Lagenorhynchus leucopleurus* = *Delphinus leucopleurus* Rasch. (= *Delphinus acutus* Gray.)

4 species in the area covered by this list:

Lagenorhynchus acutus, page 736
Lagenorhynchus albirostris, page 737
Lagenorhynchus electra, page 737
Lagenorhynchus obliquidens, page 737

In addition, Blanford recorded a specimen of *L. obscurus* Gray (1828. *Delphinus (Grampus) obscurus* Gray, Spicil. Zool. *1:* 2, pl. 2, figs. 2–5. Cape of Good Hope, South Africa) from Palk Straits, Ceylon.

On the southern forms of the genus see Bierman & Slijper, 1947, Verh. Ned. Akad. Wet. *50,* 10: 1353–64.

There is little doubt that the four species listed above are valid.

Lagenorhynchus acutus Gray, 1828 White-sided Dolphin

Approximate distribution of species: North Atlantic Ocean; British Isles (chiefly northern), Norway, Faeroe Islands, Baltic, ? Murman coast, Northern Russia. Greenland, Atlantic U.S.A.

Lagenorhynchus acutus Gray, 1828
1828. *Delphinus (Grampus) acutus* Gray, Spicil. Zool. *1:* 2. Type locality unknown.
1841. *Delphinus eschrichtii* Schlegel, Abh. aus d. Gebiete Zool. *1:* 23, pl. 1, fig. 4; pl. 4, fig. 5. Faroe Islands.
1843. *Delphinus leucopleurus* Rasch, Nytt. Mag. Naturv. *4:* 100. Gulf of Christiana, Norway.
1868. *Leucopleurus arcticus* Gray, Synops. Whales & Dolphins, 7. North Sea.

Lagenorhynchus albirostris Gray, 1846 White-beaked Dolphin

Approximate distribution of species: North Atlantic; British Isles (mainly east coast), Vendée coast in France, has been recorded Portugal, Holland, Sweden, Norway, Faeroe Islands, Baltic Sea; Greenland, Davis Strait.

Lagenorhynchus albirostris Gray, 1846
1846. *Lagenorhynchus albirostris* Gray, Ann. Mag. N.H. *17:* 84. Great Yarmouth, England.
1847. *Delphinus ibsenii* Eschricht, Undersögelser over Hvaldyrene, 5te Afh., 73.

Lagenorhynchus electra Gray, 1846 Indian Broadbeaked Dolphin

Approximate distribution of species: Vizagapatam, Bay of Bengal, India; has also been recorded from Hawaii, Senegal and Guinea coast, and Solor Island (south of Celebes) in Dutch East Indies (Bierman & Slijper, 1947). Atlantic (Goodwin, 1945, *J. Mamm. 26:* 195).

Lagenorhynchus electra Gray, 1846
1846. *Lagenorhynchus electra* Gray, Zool. Erebus & Terror, *1*, Mamm.: 35, pl. 13. Locality unknown.
1846. *Lagenorhynchus asia* Gray, *loc. cit.* Locality unknown.
1866. *Delphinus (Lagenorhynchus) fusiformis* Owen, Trans. Zool. Soc. London, *6*, 1: 22, pl. v, fig. 1, pl. vii. India.
1868. *Electra obtusa* Gray, Synops. Whales & Dolphins, 7. Locality unknown.

Lagenorhynchus obliquidens Gill, 1865 Pacific White-sided Dolphin

Approximate distribution of species: California and Washington in Pacific United States; to Japan (Kuroda, Anderson).

Lagenorhynchus obliquidens Gill, 1865
1865. *Lagenorhynchus obliquidens* Gill, Proc. Acad. Nat. Sci. Philadelphia, 177. Near San Francisco, California.

Genus **LISSODELPHIS** Gloger, 1841

1830. *Tursio* Wagler, Nat. Syst. Amphibien, 34. *Delphinus peronii* Lacepède. Not of Fleming, 1822.
1841. *Lissodelphis* Gloger, Gemeinn. Naturgesch. *1:* 169. *Delphinus peronii* Lacepède.
1861. *Leucorhamphus* Lilljeborg, Upsala Univ. Arsskrift, 5. *Delphinus peronii* Lacepède.

1 species is certainly known from the Palaearctic:

Lissodelphis borealis, page 738

In addition, Kuroda quotes two specimens of *Lissodelphis peroni* Lacepède, 1804 (*Delphinus peronii* Lacepède, H.N. Cétacés, xliii and 316, off the southern tip of Tasmania) from Japan.

Lissodelphis borealis Peale, 1848 Northern Right Whale Dolphin

Approximate distribution of species: North Pacific Ocean; California to Japan.

LISSODELPHIS BOREALIS Peale, 1848

1848. *Delphinapterus borealis* Peale, U.S. Expl. Exped. Mamm. & Ornith. 35, pl. 8, fig. 2. Pacific Ocean, 46° 6′ 50″ N., 134° 5′ W.

Genus **ORCAELLA** Gray, 1866

1866. *Orcaella* Gray, Cat. Seals & Whales B.M. 285, fig. 57. *Phocaena* (*Orca*) *brevirostris* Owen.

1871. *Orcella* Anderson, P.Z.S. 142 (footnote).

1 species: *Orcaella brevirostris*, page 738

Orcaella brevirostris Owen, 1866 Irrawaddy Dolphin

Approximate distribution of species: Bay of Bengal; Irrawaddy River, from below Prome to above Bhamo (Blanford); Siam, Java, Borneo, Straits of Malacca, east coast Malay Peninsula.

ORCAELLA BREVIROSTRIS BREVIROSTRIS Owen, 1866

1866. *Phocaena* (*Orca*) *brevirostris* Owen, Trans. Zool. Soc. London, *6*, 1: 24, pl. 9, figs. 1, 2, 3. Vizagapatam Harbour, Madras, India.

ORCAELLA BREVIROSTRIS FLUMINALIS Anderson, 1871

1871. *Orcella fluminalis* Anderson, P.Z.S. 143, fig. 2. Irrawaddy River, Burma.

Genus **PSEUDORCA** Reinhardt, 1862

1862. *Pseudorca* Reinhardt, Overs. Danske Vidensk. Selsk. Forh. 151. *Phocaena crassidens* Owen.

1 species: *Pseudorca crassidens*, page 738

Pseudorca crassidens Owen, 1846 False Killer

Approximate distribution of species: cosmopolitan. This appears to be a deep-sea form, which periodically becomes stranded on shore in large numbers. Has been recorded from British Isles, Spain, Baltic Sea, Mallorca, Japan, Ceylon, India, Cape of Good Hope, Florida, North Carolina, Lower California, Peru, Argentine, Tasmania, etc.

Pseudorca crassidens Owen, 1846

1846. *Phocaena crassidens* Owen, British Fossil Mamm. & Birds, 516. Lincolnshire Fens, near Stamford, England (subfossil).

(?) 1882. *Pseudorca? mediterranea* Giglioli, Zool. Anz. *5:* 288. Mediterranean Sea.

Genus **ORCINUS** Fitzinger, 1860

(?) 1828. *Grampus* Gray, Spicil. Zool. *1:* 2. According to Iredale & Troughton, type by tautonymy and by subsequent designation (Zool. J. 1829, *4:* 497) "*Delphinus grampus* Linn." There does not appear to be such a name of Linnaeus, and Iredale & Troughton, 1933, Rec. Aust. Mus. *19:* 28, hold that "Linn." was a misprint for "Hunt." or Hunter, who in 1787 (Philos. Trans. *77:* 373; incidentally, Iredale & Troughton quote from the abridged edition of 1809, *16:* 306) mentioned the "Grampus" in a paper on whales. But Hunter's name was a vernacular one. However, Desmarest, 1817, N. Dict. Hist. Nat. *9:* 168, quotes "*Delphinus grampus*" Hunter. Iredale & Troughton hold that Hunter's "Grampus" is the same as *Delphinus orca* Linnaeus, 1758, and they cite the type species of *Grampus* Gray, 1828, as *Delphinus grampus* "Linn." = Hunter. The type species should really be cited as *Delphinus grampus* "Linn." ? = Desmarest, since there is an element of doubt involved. In view of all this, it is not proposed to follow Iredale & Troughton, but to continue to use *Grampus* for Risso's Dolphin, *Grampus griseus* Cuvier, in which sense it has now been used for over a hundred years.

1846. *Orca* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 33. *Delphinus orca* Linnaeus. Not of Wagler, 1830.

1860. *Orcinus* Fitzinger, Wiss. Naturg. Säugeth. *6*: 204. Substitute for *Orca* Gray. *Delphinus orca* Linnaeus.

1870. *Gladiator* Gray, P.Z.S. 71. *Orca stenorhyncha* Gray = *Delphinus orca* Linnaeus.

1 species: *Orcinus orca*, page 739

Orcinus orca Linnaeus, 1758 Killer Whale; Grampus

Approximate distribution of species: cosmopolitan. Recorded from British Isles, Spain, France, Scandinavia, Novaya Zemlya, Barents Sea (where common), White Sea, Kara Sea, Beringˇ Sea, Sea of Okhotsk and Sea of Japan, Mediterranean, Baltic, Borneo, Seychelles, South Africa, Greenland, Canada, California (or a closely allied form), Patagonia, Australia, the Antarctic.

Orcinus orca Linnaeus, 1758

1758. *Delphinus orca* Linnaeus, Syst. Nat. 10th ed. *1:* 77. European seas.

1789. *Delphinus gladiator* Bonnaterre, Tabl. Encycl. et Méth. Cétologie, 23. Spitzbergen, Davis Strait, New England coast.

1804. *Delphinus duhamelii* Lacepède, H.N. Cétacés, xliii, 314. Mouth of Loire, France.

1866. *Orcinus eschrichtii* Steenstrup, in note by J. Reinhardt, Rec. Memoirs on Cetacea, Ray. Soc. 188. Kollefjord on Strömö, Faroe Islands.

1866. *Orcinus schlegelii* Lilljeborg, Rec. Memoirs on Cetacea, Ray. Soc. 235. West coast of Norway.

1870. *Orca stenorhyncha* Gray, P.Z.S. 71, figs 1 and 3. Weymouth, England.

1870. *Orca latirostris* Gray, *loc. cit.* 76. North Sea.

ORCINUS ORCA [*contd.*]

1877. *Orca gladiator arcticus* Van Beneden & Gervais, Ostéogr. des Cétacés, Atlas pl. 47. Faroe Islands.

1877. *Orca gladiator europaeus* Van Beneden & Gervais, *loc. cit.* Atlantic Ocean.

Genus **GLOBICEPHALA** Lesson, 1828

1828. *Globicephala* Lesson, H.N. Mamm. et Ois. depuis 1788, Cétacés, 441. *Delphinus deductor* Scoresby = *Delphinus melas* Traill.

1843. *Globiocephalus* Gray, List. Spec. Mamm. B.M. xxiii. For *Globicephala* Lesson.

1864. *Sphaerocephalus* Gray, P.Z.S. 244. *Globiocephalus incrassatus* Gray = *Delphinus melas* Traill.

1884. *Globiceps* Flower, P.Z.S. *1883:* 508. *Delphinus melas* Traill.

2 certainly valid species from the area covered by this list:

Globicephala macrorhyncha, page 740
Globicephala melaena, page 740

Anderson (1947) (? following Iredale & Troughton) uses the name *G. ventricosa* (1804, *Delphinus ventricosus* Lacepède, H.N. Cétacés, xliii, River Thames, England) instead of the more familiar name *melaena* for the common Blackfish. The figure of *ventricosa* however, according to Dr. Fraser, was based on a common porpoise.

Globicephala melaena Traill, 1809 Blackfish; Pilot Whale; Caa'ing Whale

Approximate distribution of species: Norway, Faeroe Islands, France, Spain, British Isles, Baltic Sea, Mediterranean Sea, Adriatic Sea, Southern Greenland, Canada, Atlantic U.S.A. Has also been recorded from Cape of Good Hope, Peru, New Zealand, Tasmania.

GLOBICEPHALA MELAENA Traill, 1809

1809. *Delphinus melas* Traill, Nicholson's J. Nat. Phil. *22:* 81, pl. 3. Scapay Bay, Pomona, Orkney Islands.

1812. *Delphinus globiceps* G. Cuvier, Ann. Mus. H.N. Paris, *19:* 14, pl. 1, two figs. St. Brieux, France.

1820. *Delphinus deductor* Scoresby, Account Arctic Regions, *1:* 496. Renaming of *melas*.

1825. *Delphinus grinda* Lyngbye, Tidsskr. Naturvid. *4:* 232. Faeroe Islands.

1862. *Globiocephalus incrassatus* Gray, P.Z.S. *1861:* 309. Coast of Dorsetshire, England.

1868. *Globicephala melaena* Thomas, The Zoologist, *2:* 99. (Feminine of *melas*.)

Globicephala macrorhyncha Gray, 1846 Indian Pilot Whale

Approximate distribution of species: Bengal, India; Cape of Good Hope and West Africa (Fraser); Straits of Malacca, off Sumatra and Java. (North Pacific, California to Japan, if *scammoni* is the same: see below.)

GLOBICEPHALA MACRORHYNCHA Gray, 1846

1846. *Globiocephalus macrorhynchus* Gray, Zool. Erebus & Terror, *1*, Mamm.: 33. "South Seas."

1852. *Globicephalus indicus* Blyth, J. Asiat. Soc. Bengal, *21:* 358. Serampore, Hooghly River, Bengal, India.

Incertae sedis

1848. *Globiocephalus sieboldii* Gray, Zool. Erebus & Terror, *1*, Mamm.: 32. Renaming of *Delphinus globiceps* Schlegel, 1841, Abh. Gebiete Zool. 33, based on a young specimen from Japan, and not of Cuvier, 1812. True suggests its identity with *G. scammoni*, in which case it would take priority. Dr. Fraser informs us that the drawing of its skull indicates that the premaxillae are more like *macrorhyncha* or *scammoni* than *melaena*.

1869. *Globiocephalus scammonii* Cope, Proc. Acad. Nat. Sci. Philadelphia, 21, figs. 12, 13. Coast of Lower California, Mexico, 31° N. Ranges to Japan. May be a synonym of *macrorhyncha* (see Fraser, 1950, Atlantide Report, No. 1: 58).

Genus **GRAMPUS** Gray, 1828

1828. *Grampus* Gray, Spicil. Zool. *1:* 2. *Delphinus griseus* Cuvier.

1873. *Grayius* Scott, Mammalia Rec. & Extinct, 104. Not of Bonaparte, 1856. Substitute for *Grampus*.

1933. *Grampidelphis* Iredale & Troughton, Records Australian Mus. *19:* 31. *Grampidelphis exilis* Iredale & Troughton from New South Wales, Australia. Substitute for *Grampus* Gray, 1828, which these authors consider should be applied to the Killer, usually known as *Orcinus* (see page 739).

1 species: *Grampus griseus*, page 741

Grampus griseus Cuvier, 1812 — Risso's Dolphin

Approximate distribution of species: recorded from British Isles, France, Spain, Italy, the Red Sea, Japan, China, South Africa, Atlantic and Pacific United States, Australia, New Zealand.

GRAMPUS GRISEUS Cuvier, 1812

1812. *Delphinus griseus* G. Cuvier, Ann. Mus. H.N. Paris, *19:* 14, pl. 1, fig. 1. Brest, France.

1822. *Delphinus rissoanus* Desmarest, Encycl. Méth. Mamm. Suppl. 519. Nice, Mediterranean coast of France.

1838. *Globiocephalus rissii* Anon. Chinese Repository, *6:* 411. Near Leuchen, China.

1846. *Grampus cuvieri* Gray, Ann. N.H. *17:* 85. Isle of Wight, England.

1846. *Grampus sakamata* Gray, Zool. Voy. Erebus & Terror, *1*, Mamm.: 31. Japan.

1859. *Globiocephalus rissoi* Blyth, J. Asiat. Soc. Bengal, *28:* 481.

1866. *Globiocephalus chinensis* Gray, Cat. Seals & Whales B.M. 323. Near Leuchen, South Chinese Seas.

1881. *Grampus souverbianus* Fischer, Actes Soc. Linn. Bordeaux, *35:* 210. No locality.

Incertae sedis

Grampidelphis kuzira Iredale & Troughton, 1933, Records Australian Mus. *19:* 34. Japanese seas. Based on the skull figured by Gervais as *Grampus sakamata* (1880, Ostéogr. Cétacés, 568, pl. 64).

NEW NAMES PROPOSED IN THIS CHECKLIST

Episoriculus subgen. nov. for *Sorex caudatus* Horsfield (*Soriculus*) (page 56).
Eptesicus tatei for *Nycticeius atratus* Blyth, 1863 *nec* Kolenati, 1858 (page 158).
Mustela erminea martinoi for *M. e. birulai* Martino, 1931 *nec* Ognev, 1928 (page 256).
Mustela lutreola novikovi for *M. l. borealis* Novikov, 1939 *nec* Radde, 1862 (page 263).
Mustela lutreola binominata for *M. l. caucasica* Novikov, 1939 *nec* Barrett-Hamilton, 1900 (page 263).
Paradoxurus hermaphroditus milleri for *P. h. fuscus* Miller, 1913 *nec* Kelaart, 1852. (page 288).
Trachelocele subgen. nov. for *Antilope subgutturosa* Guldenstaedt (*Gazella*) (page 389).
Apodemus flavicollis argyropuloi for *A. f. parvus* Vinogradov & Argyropulo, 1941 *nec* Bechstein, 1796 (page 568).

NAMES OVERLOOKED IN FIRST PRINTING

Tupaia lacernata kohtauensis Shamel, 1940, J. Mammal. **11**: 71. Koh Tau, off east coast of the Malay Peninsula.

Talpa europaea obensis Skalon & Rajevsky, 1940, Nauch.-metodich. zap. Gl. upr. zapoved. 7: 195–197 [*N.V.*]. Near Shukhtunkurg, River Sosvye, River Ob, about 62°30′ N., 34° E. (of Leningrad) (*fide* Stroganov, S. U., Insectivores of Siberia, 1957: 61, 262).

Talpa europaea velessiensis Petrov, 1941, Zap. russk. nauch. Inst. Bêlgr. **16**: 58 [*N.V.*]. Pepelište, near Krivolak, 40 kilometres south-east from Veles, Jugoslavia (*fide* Mirić, D., Z. Säugetierk. 1960, **25**: 35).

Talpa orientalis talyschensis Vereschchagin, 1945, Priroda, Mosk. No. 6: 67. Vilyazhchaya Gorge, Talysh, Azerbaijan. 1,500–1,600 metres.

Sorex isodon princeps Skalon & Rajevsky, 1940, Nauch.-metodich zap. Gl. upr. zapoved. 7: 198–199 [*N.V.*]. Basin of Em-Engana, Kondo-Sosvinski reserve, Siberia (*fide* Stroganov, Insectivores of Siberia, 1957: 123, 262).

Sorex isodon princeps montanus Skalon & Rajevsky, 1940, Nauch.-metodich zap. Gl. upr. zapoved. 7: 199–200 [*N.V.*]. Teletskoe Lake, Altai (*fide* Stroganov, S. U., Insectivores of Siberia, 1957: 124, 262).

Pteropus hypomelanus maris G. M. Allen, 1936, Rec. Indian Mus. **38**: 343. Heratara, Addu Atoll, south end of Maldive Archipelago.

Rhinolophus ferrumequinum martinoi Petrov, 1941, Zap. russk. nauch. Inst. Bêlgr. **16**: 59, 62 [*N.V.*]. Trifunovićevo, Brdo (Orl-Bajir), near Pepelište, 40 kilometres south-east from Veles, Jugoslavia (*fide* Mirić, D., Z. Säugetierk. 1960, **25**: 36).

Rhinolophus bocharicus rubiginosus Gubareff, 1941, Acta Mus. zool. Kiev. 1939, **1**: 287, 289, 290. Transcaucasica, Shusha, Azerbaijan S.S.R., 1,200 metres.

Tadarida teniotis cinerea Gubareff, 1941, Acta Mus. zool. Kiev. 1939, **1**: 288, 290, 291. Dashalty defile, Shusha, Azerbaijan S.S.R., 1,200 metres.

Myotis abei Yoshikura, 1944, Zool. Mag., Tokyo, **56**, 1–3: 6. Sirutoru, Motodomari-gun, Southern Saghalien (Sakhalin).

Miniopterus schreibersi baussencis Laurent, 1944, Bull. Mus. natn. Hist. nat., Paris, (2), **16**: 227. Grotte des Fées, Les Baux (near Arles), Provence, France.

Macaca irus condorensis Kloss, 1926, J. Siam Soc. Nat. Hist. Suppl. **6**: 357. Pulo Condor, off Cochin China.

Canis lupus dorogostaiskii Skalon, 1936, Izv. Gos. protivochumn. Inst. Siberia D.V.K. **4**: 193 [*N.V.*]. South Zabaikalia (*fide* Novikov, G. A., Fauna U.S.S.R. No. 62. Predaceous Mammals of U.S.S.R., 1956: 42).

Vulpes rüppelli cufrana de Beaux, 1939, Annali Mus. libico Stor. nat. **1**: 396. Cufra (= Kufra) Oasis, Libya.

Martes (*Martes*) *zibellina altaica* Kuznetzov, 1941, Trud. Moscow zootech. Inst. **1**: 113 [*N.V.*]. Altai (*fide* Novikov, G. A., Fauna U.S.S.R. No. 62, Predaceous Mammals of U.S.S.R., 1956: 174, 184).

Martes (*Martes*) *zibellina jakutensis* Kuznetzov, 1941, Trud. Moscow zootech. Inst. **1**: 113 [*N.V.*]. Yakutsk (*fide* Novikov, G. A., *loc. cit.* 174, 185).

Martes zibellina averini Bashanov, 1943, Izv. kazakh. Fil. Akad. Nauk SSSR, 1942, **2**: 53 [*V.V.*]. Katon-Karagai region, Southern Altai (*fide* Bannikov, A. G., Trud. Mongolisk. Komiss. No. 53. Mammals of the Mongolian People's Republic, 1954: 82).

Mustela erminea teberdina Kornejev, 1941, Acta Mus. zool. Kiev. 1939, **1**: 174. Teberda, Caucasus.

Odobenus rosmarus laptevi Chapski, 1940, Problemy Arkt. No. 6: p. ?. [*V.V.*]. Laptev Sea (*fide* Popov, L. A., Byull. mosk. Obshch. Isp. Prir. Biol. N.S. 1960, **65**, 2: 25, 30).

Sus leucomystax sibiricus Staffe, 1922, Arb. Lehrkanzel Tierzucht a.d. Hochschule Bodenkultur Wien **1**: 51, pls. 1–3. Tunkinsk Mountains, Sajan Mountains, South Siberia.

Cervus elaphus brauneri Charlemagne, 1920, Zviri Ukraini, Kiev, p. ?. [*V.V.*]. (*fide* Dobroruka, L. J., Zool. Anz. 1960, **165**: 482, 483).

Capreolus pygargus caucasicus Dinnik, 1910, Zveri Kavkaza, **1**: 66 [*V.V.*]. (*fide* Flerov, K. K., Fauna of U.S.S.R. Mammals. **1**, 2 Musk Deer and Deer, III).

Lepus europaeus cyrensis nat. nov. *lencoranicus* Ognev, 1940, Mammals of U.S.S.R., **4**: 158. Kisil-Agach, 35 kilometres south of Lencoran, Azerbaijan.

Callosciurus caniceps helvus Shamel, 1930, J. Mammal. **11**: 72. Koh Tau, off east coast of the Malay Peninsula.

Ratufa melanopepla condorensis Kloss, 1921, J. Nat. Hist. Soc. Siam, 1920, **4**: 71. Main Island, Pulo Condore group, off Cochin China.

Selevinia paradova Argyropulo & Vinogradov, 1939, Priroda, Mosk. No. 1: 81–83 [*V.V.*]. Betpakdala, U.S.S.R. (*fide* Bashanov, B. S. & Belosludov, B. A., J. Mammal. 1941, **22**: 312).

Glis glis vagneri V. Martino & E. Martino, 1941, Zap. russk. nauch. Inst. Bèlgr. **17**: 9 [*V.V.*]. Vrhpolje, Kamnik, Kamniske Alpe, Slovenia (*fide* Mirić, D., Z. Saugetierk. 1960, **25**: 36).

Glis glis intermedius V. Martino & E. Martino, 1941, Zap. russk. nauch. Inst. Bèlgr. **17**: 9–10 [*V.V.*]. Presaca, Donji Milanovav, North-Eastern Serbia. Preoccupied by *Glis italicus intermedius* Altobello, 1920 (*fide* Mirić, D. Z. Saugetierk. 1960, **25**: 36).

Glis glis martinoi Mirić, 1960, Z. Saugetierk. **25**: 36. Nom. nov. for *Glis glis intermedius* V. Martino & E. Martino, preoccupied.

Karstomys V. Martino, 1939, Zap. russk. nauch. Inst. Bèlgr. **14**: 88 [*V.V.*]. Nom. nov. for *Petromys* V. Martino, 1934, preoccupied (*fide* Mirić, D., Z. Saugetierk. 1960, **25**: 37).

Sylvaemus sylvaticus sylvaticus morpha *hessei* V. Martino & E. Martino, 1933, Zb. radova posv. Z. Djordjeviću, Belgrade, 301, 302, 309 [*V.V.*]. Crni Kamen, Šar Planina Mountains, near Kačanik, Jugoslavia (*fide* Mirić, D., Z. Saugetierk. 1960, **25**: 37).

Sylvaemus sylvaticus sylvaticus morpha *dichruroides* V. Martino & E. Martino, 1933, Zb. radova posv. Z. Djordjeviću, Belgrade, 301, 302, 309 [*V.V.*]. (*fide* Mirić, D., Z. Saugetierk. 1960, **25**: 38).

Mus sylvaticus var. *taurica* Pallas, 1811, Zoographia, **1**: 168 "Crimea" (Heptner, V. G., Dokl. Akad. Nauk. SSSR, 1948, **60**: 177).

Apodemus sylvaticus iconicus Heptner, 1948, Dokl. Akad. Nauk. SSSR. **60**: 178. Nom. nov. for *Apodemus sylvaticus tauricus* Barrett-Hamilton, 1906, preoccupied by *Mus sylvaticus* var. *tauricus* Pallas, 1811.

Apodemus tauricus argyropuloi Heptner, 1948, Dokl. Akad. Nauk. SSSR, **60**: 178. Nom. nov. for *Apodemus flavicollis parvus* Vinogradov & Argyropulo, 1941. (Antedates *Apodemus flavicollis argyropuloi* Ellerman & Morrison-Scott, 1951 (misprinted *argyropuli* on p. 568 of Checklist of Palaearctic and Indian Mammals, 1758–1946, 1st printing 1951).

Clethrionomys glareolus natio *bosniensis* V. Martino, 1945, Glasn. zemalj. Mus. Bosni Herceg., N.S. **1**: 69 [*N.V.*]. Lah, Sarajevo, Bosnia (*fide* Mirić, D., Z. Säugetierk. 1960, **25**: 39).

Clethrionomys glareolus natio *petrovi* V. Martino, 1945, Glasn. zemalj. Mus. Bosni Herceg., N.S. **1**: 69 [*N.V.*]. Lisic, Rugova, between Metohija and Montenegro (*fide* Mirić D., Z. Säugetierk. 1960, **25**: 39).

Clethrionomys glareolus pirinus Wolf, 1940, Izv. tsarsk. prirodonauch. Inst. Sof. **13**: 158. Bandariza Hut, Pirin Mountains, Bulgaria, 1,800 metres.

Arvicola terrestris morpha *subalpina* Petrov, 1943, Posebna Izd. srp. Akad. Nauka 135 prirod. mat. Spisi, **34**: 371. Suva Planina Mountains, Jugoslavia.

Microtus guentheri martinoi Petrov, 1941, Prirodosl. raspr. **3**, (16): 363–365 [*N.V.*]. Pepelište, near Krivolak, 40 kilometres south-east from Veles, Jugoslavia (*fide* Mirić, D., Z. Säugetierk. 1960, **25**: 44).

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AMENDMENTS

p. 10. *Tana* Lyon, 1913 is preoccupied by *Tana* Reed, 1888, a fly. It has been replaced by *Lyonogale* Conisbee, 1953, A list of the names proposed for genera and subgenera of recent mammals from the publication of T. S. Palmer's "Index Generum Mammalium" 1904 to the end of 1951, p. 46.

p. 110. *Rhinophyllotis* Iredale & Troughton, 1934 is a *nomen nudum*. It can be validated from Troughton, 1943, Furred Animals of Australia, p. 342.

p. 133. *Micronomus* Iredale & Troughton, 1934 and *Austronomus* Iredale & Troughton, 1934 are *nomina nuda*. Both may be validated from Troughton, 1943, Furred Animals of Australia, pp. 361 and 360 respectively.

p. 151. *Discopus* Osgood, 1932 is preoccupied by *Discopus* (Chevrolat M.S.) Thomson, 1864, a beetle and by *Discopus* Zelinka, 1888, a rotifer. It has been replaced by *Eudiscopus* Conisbee, 1953, A list of the names proposed for genera and subgenera of recent mammals from the publication of T. S. Palmer's "Index Generum Mammalium" 1904 to the end of 1951, p. 30.

p. 230. The reference to *Vulpes corsac scorodumovi* Dorogostajski is apparently Izv. irkutsk. gos. nauch.-issled. protivoch. Inst. Siberia dal'n Vost. 1934, T.I. [*N.V.*] (*fide* Stroganov, S. U., Animals of Siberia, Carnivora, 1962; 55, 446, who also cites it from 1935 (p. 55)).

p. 245. The probable reference to *Martes martes borealis* Kuznetzov is Trud. Moscow zootech. Inst. 1941, 1: 113 [*N.V.*].

p. 246. The probable reference to *Martes martes uralensis* Kuznetzov is Trud. Moscow zootech. Inst. 1941, 1: 113 (*fide* Novikov, G. A., Fauna U.S.S.R. No. 62. Predaceous Mammals of the U.S.S.R., 1956: 185, 193; Stroganov, S. U., Animals of Siberia, Carnivora, 1962: 217 (who quotes pp. 126–127)).

p. 249. The probable reference to *Martes* (*Martes*) *zibellina tungusensis* (or *tungussensis*), *M.* (*M.*) *z. arsenjevi*, and *M.* (*M.*) *z. schantarica*, all of Kuznetzov is Trud. Moscow zootech. Inst. 1941, 1: 113 [*N.V.*] (for *tungusensis fide* Novikov, G. A., *loc. cit.* 174, 184).

p. 265. The probable reference to *Mustela* (*Putorius*) *eversmanni satunini* Migulin is Ukraine Mislivets ta Ribalka, 1928, 7–8. 55 [*N.V.*]. (*fide* Novikov, G. A., *loc. cit.* 152, 157).

p. 288. *Paradoxurus hermaphroditus milleri* Ellerman & Morrison-Scott, 1951 is preoccupied by *Paradoxurus milleri* Kloss, 1908. It has been replaced by *Paradoxurus hermaphroditus conisbeei* Ellerman & Morrison-Scott, J. Mammal. 1952, **33**: 399.

p. 445. The following should be added to the synonymy of *Ochotona* Link, 1795: *Abra* Gray, 1863, Cat. Mamm. Hodgson Coll., 2nd ed., 11. *Lagomys curzoniae* Hodgson, 1858. Preoccupied by *Abra* Lamarck, 1818, a lamellibranch.
Abrana Strand, 1928, Arch. Naturgesch. **92**, 8: 59. New name for *Abra* Gray.

p. 539. *Dipus deserti* Loche, 1858, Cat. Mamm. Ois. Algérie, 21 (a *nomen nudum*?) should be listed with *Dipus deserti* Loche, 1867 (= *Jaculus jaculus deserti*). If valid, this name must be dated from 1858.

p. 632. *Gerbillus garamantis* Lataste, La Naturaliste, 1881, 1: 507 is described in a key on p. 506 as *garamentis* but Lataste says it is named from "Pays des Garamantes".

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